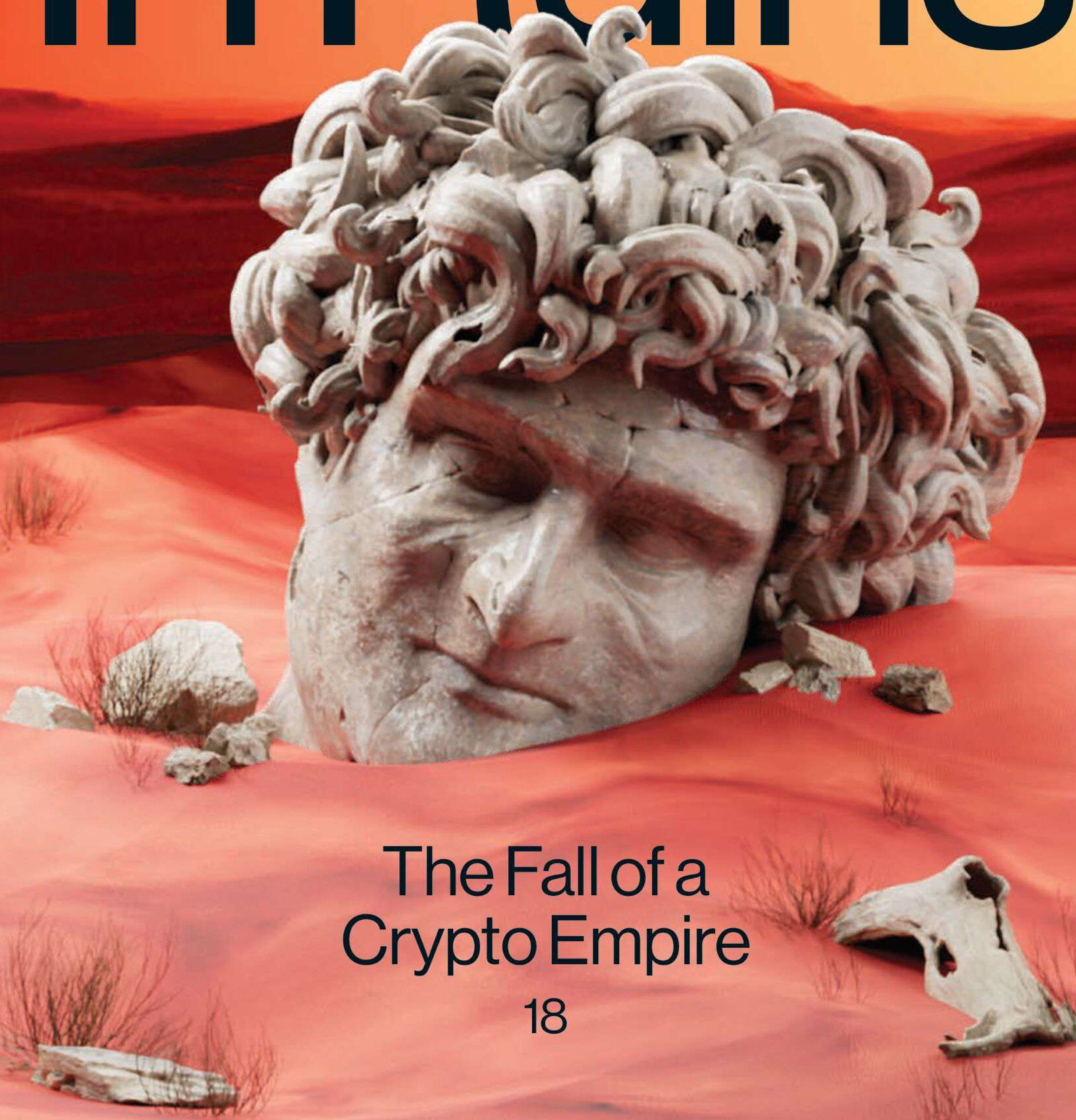
Bloomberg Businessweek

November 21, 2022 ● DOUBLE ISSUE

In Ruins



The Fall of a Crypto Empire

18

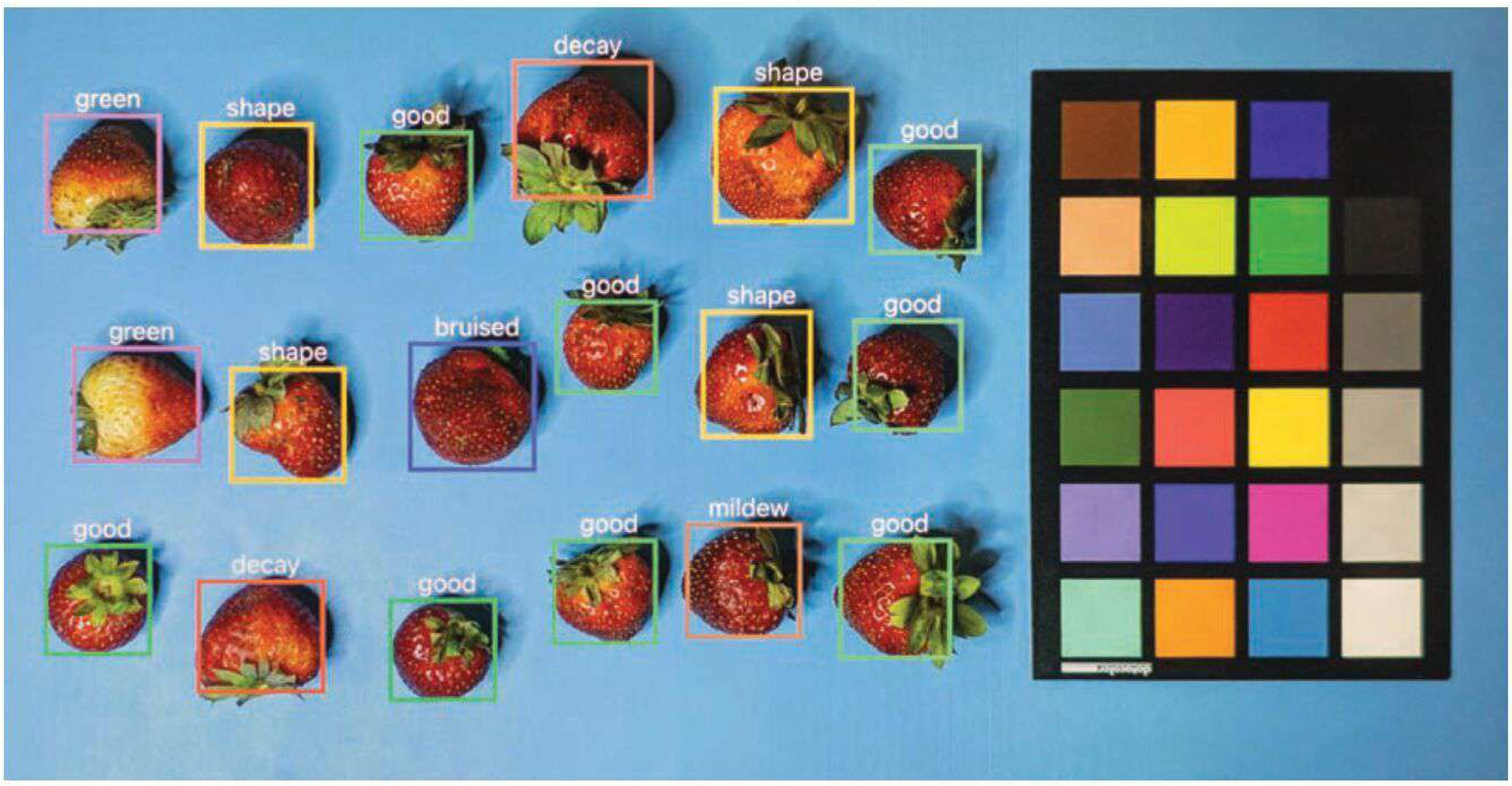

I Live a Life of
Climb

Bloomberg Businessweek

November 21, 2022

◀ The discovery of vast reserves of oil offshore has turned Guyana's capital, Georgetown, into a boomtown

FEATURES



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■ COVER TRAIL

How the cover gets made

❶

"So this week we're looking at the implosion of Sam Bankman-Fried's crypto exchange, FTX."

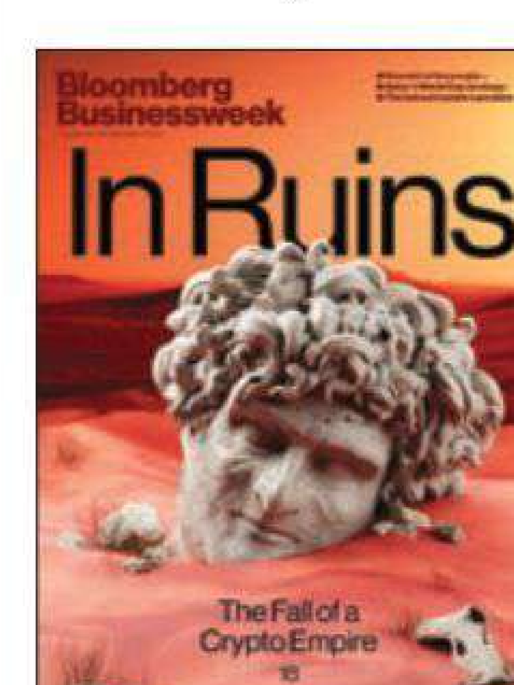
"What kind of implosion are we talking here...?

... An '*Oops, my bad, y'all!*' implosion...?

... Or an '*Oh crap, we've been hacked!*' implosion?"

"The exchange went bust, and his net worth went from $16 billion to, like, $3, overnight."

"Yikes! That's more epic than I thought."



Cover: Illustration by Chanyu Chen

TECHNOLOGY: PHOTOGRAPH BY MCNAIR EVANS FOR BLOOMBERG BUSINESSWEEK

● Iran sentenced three more protesters to death.

A total of five people, indicted under charges such as "war against God," face execution for participating in the demonstrations triggered by the death of Mahsa Amini in police custody on Sept. 16. Security forces have killed at least 342 people and arrested about 15,000. The UN has urged Iran to release all peaceful protesters.

● War in Ukraine

▶ After retreating from the city of Kherson last week, Russia fired a barrage of missiles at Kyiv and other cities across Ukraine, hitting civilians and critical infrastructure. Authorities say it's the largest such assault since Russia first invaded in February. ▷ 48

▶ A rocket hit a Polish village just over the Ukraine border on Nov. 15, killing two; investigators say it was likely fired by Ukrainians repelling Russian cruise-missile attacks. NATO Secretary General Jens Stoltenberg told reporters that "Russia bears ultimate responsibility, as it continues its illegal war against Ukraine."

● British street artist Banksy has begun tagging buildings—such as this one in Borodyanka, northwest of Kyiv—destroyed by the Russian army.

● Worldwide, there have been more than 636 million coronavirus infections,

6.6m

people have died, and almost 12.8 billion vaccine doses have been given. Foreign cruise ships will soon be able to return to Japan for the first time since the early days of the pandemic, after the country loosened travel restrictions last month.

● Amazon plans to cut about 10,000 jobs.

The largest-ever head count reduction at the e-commerce giant will be concentrated in its devices group, which makes the Echo smart speakers and Alexa digital assistant, as well as its retail divisions and human resources.

● At some time on Nov. 15, the population of the world reached

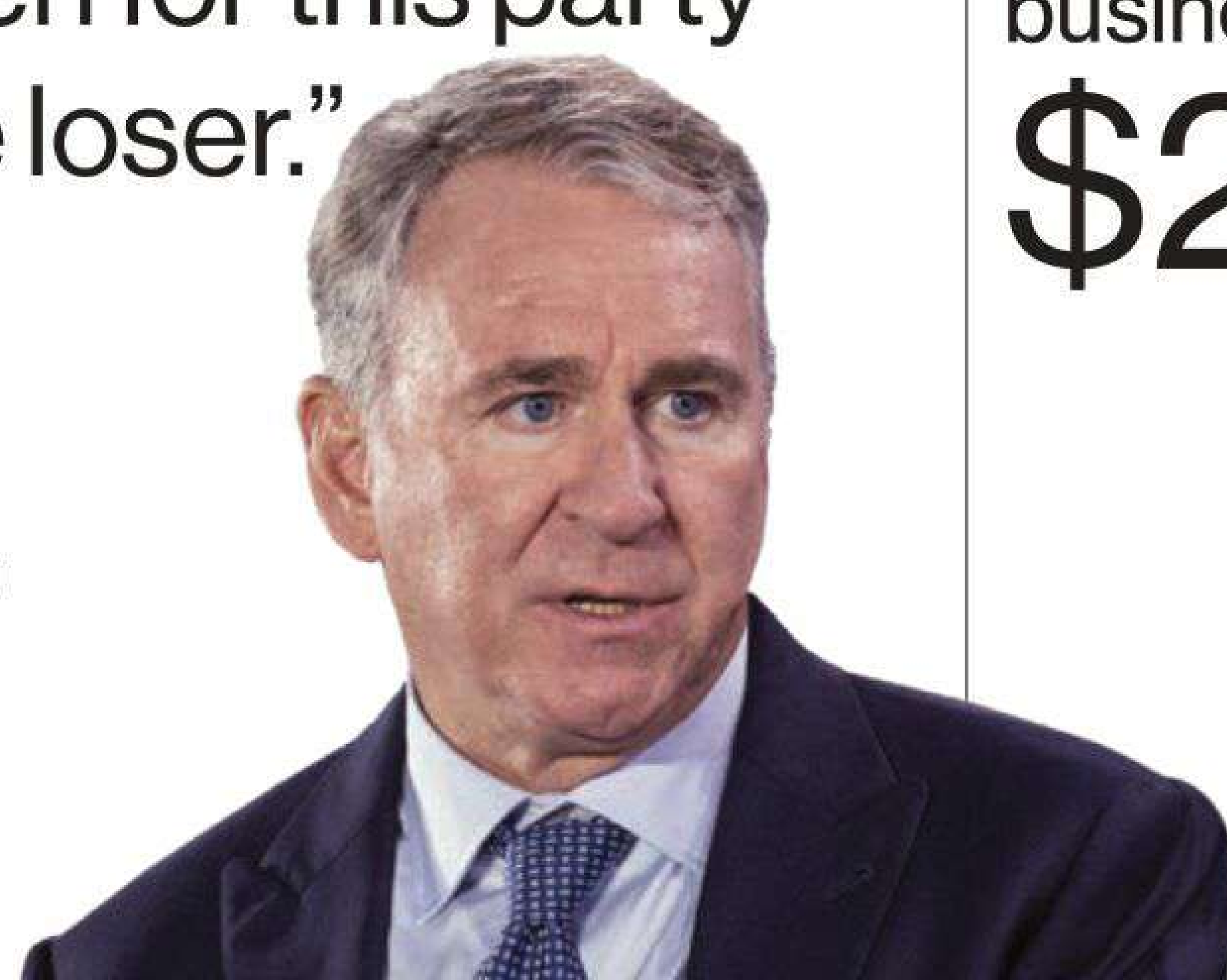
8b

according to the UN. Rapid growth in the global south is driving most of the gain, but consumption in developed nations is the greatest threat to life on Earth, with the richest 10% of the population responsible for most carbon emissions.

● Germany has filled its natural gas storage sites to the max.

Consumers and companies were anxious to reach this national milestone after Russia cut off deliveries, constraining supplies. ▷ 28

● "I'd like to think that the Republican party is ready to move on from somebody who has been for this party a three-time loser."



Billionaire GOP donor Kenneth Griffin on Nov. 15 urged the party to move on from Donald Trump, citing his 2020 defeat, the loss of Georgia Senate seats in 2021 and this year's midterms. The former president announced later that day that he'll seek to return to the White House in 2024.

● Estée Lauder agreed to buy US luxury brand Tom Ford in a deal that values the business at about

$2.8b

● Natasa Pirc Musar will become Slovenia's first female head of state.

Her center-left coalition won the country's parliamentary elections on Nov. 13. A human-rights advocate and former head of Slovenia's information watchdog, she also once worked for former US First Lady Melania Trump, who was born in Slovenia, in libel and trademark cases.

UKRAINE: SERGEI CHUZAVKOV/GETTY IMAGES. GRIFFIN: BRYAN VAN DER BEEK/BLOOMBERG. MUSAR: LUKA DAKSKOBLER/GETTY IMAGES

Despite the Good News, Inflation Isn't Dead Yet

Investors have been celebrating recent US inflation data, which showed both consumer and producer prices rising by less than expected in October. But it wouldn't be wise to get carried away by a single month's numbers. As markets ponder the Federal Reserve's next move, it's too soon to be sure that the pace of monetary tightening can be safely scaled back.

Consumer prices rose 7.7% in the year through October, down from 8.2% in September and the peak of 9.1% in June. The new rate is the lowest since January, before Russia's war on Ukraine roiled global energy and commodity markets. Stripping out the cost of energy and food, core CPI inflation is lower, and also falling–to 6.3% from 6.6% in September. The Nov. 10 report made investors more confident that the Fed's next hike in interest rates will be only 50 basis points, ending its recent run of 75-point increases.

A similar story prevailed with data released on Nov. 15. The October producer price index rose by 8% from the year before, the smallest annual gain in more than a year and less than the 8.3% economists had been expecting. It was up only 0.2% from the previous month, compared with an expected 0.4%.

All good news. But there are reasons for caution nonetheless. Inflation numbers are volatile, and a short run of figures doesn't make a trend. The slowdown in price increases was pretty broad-based, which is fine, but it was helped by a sharp decline in the medical-insurance component, which the pandemic distorted. Before the Fed makes its next interest-rate decision in December, it will have another inflation report and new information on the state of the labor market to consider. That data will shed more light on whether the path of prices has indeed turned.

A different question then arises: How much further, as opposed to how quickly, should interest rates rise from now on? On this, the Fed has been less than explicit. Its most recent projections in September indicated a so-called terminal rate of about 4.5%, but Chair Jerome Powell later sounded a more hawkish note, leading markets to expect a peak of roughly 5% in the middle of next year. Powell has said that a moderately positive real rate will be required. Supposing inflation falls to 4% by the middle of next year and looks on track to fall gradually back to its 2% target, a terminal rate of 5% might then be about right.

The new data make this gradual path to lower inflation plausible. It would be consistent with a slower pace of interest-rate increases from here on, as Fed Vice Chair Lael Brainard suggested on Nov. 14. With luck it could also allow the soft landing the Fed still hopes to engineer for the economy. But a lot has to go right for things to turn out so well. New supply-side shocks would change everything. Congress has to avoid the kind of fiscal recklessness that would throw a wrench into the works. And despite the planned-for persistence of higher-than-target inflation through next year, price expectations will have to stay anchored–most likely requiring, in turn, a faster reduction of labor-market pressure on wages than seen so far.

For the moment, therefore, let joy be confined. The fight to control inflation has a long way to go. Ⓑ *For more commentary, go to bloomberg.com/opinion*

AGENDA

ILLUSTRATION BY PATRICIA TARCZYNSKI

► The Heat Is On

The World Cup begins Nov. 20 in Qatar. The tournament follows years of controversy over how FIFA selected the tiny emirate as host and how it constructed lavish stadiums in the desert. ▷ 8

► Ukrainian President Volodymyr Zelenskiy addresses the NATO Parliamentary Assembly on Nov. 21, seeking to win backing for more weapons to build on recent military advances.

► Credit Suisse shareholders vote on a capital increase on Nov. 23. The bank seeks to raise about 4 billion Swiss francs ($4.2 billion) as part of a huge turnaround effort.

► South African President Cyril Ramaphosa pays a state visit to the UK Nov. 22-24. Relations have been strained by his refusal to condemn Russia's war in Ukraine.

► The UK plans its first-ever space launch in the week of Nov. 28 from Spaceport Cornwall in southwest England. The rocket will be deployed from underneath a converted Boeing 747.

► Taiwan voters choose city and county leaders on Nov. 26. Chiang Wan-an, great-grandson of former Taiwan leader Chiang Kai-shek, leads polls in the race to be Taipei's next mayor.

► Black Friday will test shoppers' appetites for bargains on Nov. 25. It's usually a huge day for US retail, but cost-of-living concerns may kneecap this year's spending spree.

Where to Invest

Discover Gyeonggi Province, the center of innovation for Korea's future industries.

01 Innovation foundation for future industries

- Next-generation research facilities of top 4 global semiconductor equipment manufacturers
- Korea's largest concentration of innovative enterprises with expertise in technology commercialization
- Pangyo: Korea's innovative IT convergence cluster
- R&D investment: USD **39** billion (52% of national total, No. 1 in Korea)
- Number of research institutions: **19,509** (35% of national total, No. 1 in Korea)
- Tech startups: **84,215** (36% of national total, No. 1 in Korea)

02 Buying Power of Semiconductor & Auto Industries

- World's largest memory chip plant (Samsung Electronics)
- Headquarters and R&D hub of world's No. 3 automaker (Hyundai Motors)
- Massive Samsung and SK Hynix semiconductor clusters
- Samsung, SK Hynix and Hyundai Kia supply chain partner clusters
- Registered factories: **72,868** (36% of national total, No. 1 in Korea)
- Skilled personnel: **487,432** (30% of national total, No. 1 in Korea)

03 Superior Human Resources

- Population: **13.93** million (27% of national total, No. 1 in Korea)
- GRDP: USD **413** billion (25% of national total, No. 1 in Korea)
- Economically active population: **7.82** million (27% of national total, No. 1 in Korea)

Qatar's $300 Billion Trophy

● It's not just the World Cup. Middle Eastern countries are spending heavily to snag F1 races and other marquee events

● By Simone Foxman, Ben Bartenstein and Janet Paskin

Qatar's bid to host this year's FIFA World Cup was controversial from the start. Beyond objections to the country's history of human-rights abuses, there were also the searing temperatures and the sheer logistical challenges to consider: one outdated stadium, few hotels and zero experience with mass tourism.

Nothing, it turns out, that immense sums of money couldn't address. Twelve years after winning the rights to host the tournament and $300 billion later, the tiny gas-rich nation is ready to host the best players in men's soccer and about a million of their biggest fans. There are seven new stadiums, 20,000 new hotel rooms, a new metro and more than 1,100 miles of new roads, the culmination of a decade of nonstop construction and investment.

Qatar's spending on sports isn't confined to the World Cup. Since being awarded the event by FIFA, soccer's international governing body, the country has been on a spree, buying a majority stake in Paris Saint-Germain—one of France's top soccer clubs—and a 22% interest in Portuguese team SC Braga. It held a Formula One race in 2021, then secured a decade-long hosting contract that starts next year.

The nation's wealthiest neighbors have matched the spending on sports blow for blow. The region will host four F1 races in 2023, while Saudi Arabia and Abu Dhabi each own an English Premier League soccer team. There's also LIV Golf, growing investments in e-sports and major boxing and mixed martial arts events. In October two teams from the National Basketball Association played a preseason game in the Middle East, a first for the US league.

"The immense wealth of the Gulf states relative to their small populations gives them this large margin to invest in promoting their image," says Dania Koleilat Khatib, a Dubai-based scholar with the Hoover Institution at Stanford University. "Sports are high-profile events that contribute to the prestige of the countries, plus they generate traffic."

The gravitational pull of Gulf riches has triggered accusations of so-called sportswashing—the charge that these countries are trying to use good vibes from athletic events to improve their questionable global reputations. Saudi Arabia, the United Arab Emirates and Qatar are actively trying to

ILLUSTRATION BY LAURA EDELBACHER

extend their global brands beyond being known for fossil fuel production. Some argue that they're trying to gloss over even less savory aspects, including repression of dissidents and entrenched discrimination against women and minorities.

Hosting the World Cup "will serve to strengthen the image of Qatar," says Giorgio Cafiero, chief executive officer of Washington-based risk consulting firm Gulf State Analytics. He says it will "help portray the country as being a very forward-thinking, progressive and outwardly oriented Gulf state that is committed to bringing different kinds of people together."

The kind of place, in other words, where a business traveler could feel good about entertaining clients, a trade association could host a conference or a family could vacation for a few days—like Las Vegas, with less vice.

The next decade is a pivotal one for countries that rely heavily on fossil fuel revenue. Many countries and companies have set 2030 as the year when they'll begin to reduce their energy consumption, while many are increasingly looking to cleaner alternatives to slow climate change. Qatar itself has also sought to bill this year's World Cup as carbon-neutral, though independent researchers have expressed skepticism about their calculations.

In the short term, places such as Qatar will benefit from the energy crisis precipitated by Russia's invasion of Ukraine. And as one of the world's top exporters of liquefied natural gas, Qatar is set to profit from surging European demand. But the fallout from the war has also highlighted the need for importers to buttress their energy security and reduce their reliance on fossil fuels. For producers, that means the race is on to secure their economic futures before demand dwindles.

Case in point: Saudi Arabia, which didn't issue tourist visas until 2019, now expects to spend $1 trillion to bring in visitors. As part of its scheme to build Neom—a high-tech city in the desert—the country is planning to create an artificial ski resort and in October was picked to host the 2029 Asian Winter Games. The multisport event can be seen as a proving ground for places that want to host bigger gatherings including the Olympic Games while also showcasing the country to billions of potential tourists.

Saudi Arabia's smaller neighbors are also promoting themselves as destinations. By the end of this decade, the UAE wants tourism to contribute 15% of gross domestic product. Qatar is aiming for 6 million visitors a year, double the number from 2016. The countries can't hit those kinds of numbers without changing the way moneyed tourists think of them.

There's also more to the makeover than economic growth. For Qatar, especially, global visibility has become a matter of survival. Just five years ago, an escalation of regional rivalry led Saudi Arabia, the UAE, Bahrain and Egypt to cut off diplomatic, trade and travel ties with the country. Some reports even warned of a possible Saudi invasion. It took US intervention, and the economic self-interest inspired by a pending flood of World Cup tourists to the region, to end the stalemate last year.

FIFA, the International Olympic Committee and other governing bodies have long argued that bringing sports to undemocratic countries does more good than harm. That's questionable. On the same day that Qatar received the rights to this year's competition, FIFA also awarded the 2018 tournament to Russia, which has since drifted even further into state repression and embarked on the invasion of Ukraine. The cynical take is that sports organizers don't have much choice. Gulf countries are among a shrinking group of nations willing to pay top dollar to host marquee sporting events. In European and American cities, residents—aka voters—tend to see the Olympic Games as a waste of taxpayer money and have repeatedly rejected proposed bids.

"Sports are certainly connected to politics, business and community," Steve Koonin, CEO of the Atlanta Hawks NBA team, said in an interview when the team was in Abu Dhabi for a preseason game against the Milwaukee Bucks. "Coming to the UAE, we understand that not everything aligns with our values, yet we also understand that when you're a guest in someone's house you appreciate the differences. Then hopefully over time you can open eyes and unlock hearts to change things."

Media reports have detailed cases of laborers in Qatar who worked on the stadiums and other infrastructure being subjected to inhumane treatment and unsafe conditions, while Amnesty International has accused the government of failing to properly investigate the deaths of many migrant workers. After years of scrutiny and questioning, the country made significant changes to its labor laws, though worker advocates would like to see more laws and better enforcement. Some players and fans have called for boycotts, but soccer authorities in participating countries ultimately rejected the idea. Amnesty and other groups said enforcement of Qatar's labor reforms has fallen short, but they note the changes have been positive overall and haven't encouraged fans or teams to stay away.

The government has promised to welcome everyone, and Bloomberg News has reported that it may not clamp down on protests during the World Cup, including those advocating for LGBTQ rights. But there's reason to doubt that all the reforms will persist. The 2008 Beijing Summer Olympics were also heralded as a testament to progress, liberalization and opening up. Yet 14 years and one Winter Games later, China is if anything under even tighter controls as President Xi Jinping embarks on a third term.

Saudi Arabia, Greece and Egypt are bidding jointly to host the men's soccer World Cup in 2030. It's also clear that both Saudi Arabia and Qatar are interested in hosting the Olympics, offering another opportunity for charges of sportswashing—and opportunities for economic and social advancement.

"The Gulf is looking increasingly likely for the Olympic Games," says Simon Chadwick, a professor of sport and geopolitical economy at Skema Business School in Paris. "Women will have to show their legs and their arms, and they won't cover their heads. That is a really interesting prospect." Ⓑ
—With David Hellier and Matthew Martin

Sears's Long Goodbye

● Finally out of bankruptcy, it faces a changed retail landscape and an uncertain future

Barely three decades ago, Sears was the world's largest retailer. And this time of year its stores, once a fixture in malls across America, would be crowded with holiday shoppers snapping up clothing, home goods, appliances or toys that their kids had carefully circled on the pages of the retailer's venerable Christmas *Wish Book*.

This holiday season the company barely exists, with fewer than two dozen full-size stores in operation, compared with the more than 3,500 Sears and Kmart stores operated by Sears Holdings Corp. at its height. In most malls the chain's once-hulking emporiums have been subdivided into smaller spaces for other stores, refashioned for nonretail operations such as medical offices or gyms, or simply left vacant. The Sears estate in late October finally wrapped up its acrimonious four-year-long bankruptcy, but the company's diminished size and uncertain future are an ignominious comedown for a company that for more than a century defined American retailing.

It wasn't supposed to end this way. Yes, Sears had long been in decline. And a changing retail landscape had seen the rise of specialty apparel chains, discounters, big-box stores and most recently e-commerce giants such as Amazon.com Inc. all eat away at the company's hold on consumers. But years of underinvestment and dismantling under the stewardship of its would-be savior, hedge fund manager Eddie Lampert, also helped bring the company to this moment: signature brands including Craftsman and DieHard gone, as well as most of the jobs that Lampert's purchase was supposed to preserve.

"A failure to invest in itself is why Sears melted down to what it is today," says Steve Azarbad, a managing director at TradeGuard, which provides credit services to retail vendors. "At this point, investors would have been better off if it liquidated 10 years ago."

Lampert, who at various times held the role of investor, lender, chief executive officer and eventually owner of the company, couldn't fix Sears. But critics say he made sure his own interests were protected during his almost two-decade relationship with the company. As its largest investor, he benefited from years of spinoffs and sales that were at the heart of a recently settled consolidated lawsuit with creditors and the Sears bankruptcy estate. The suit accused the financier, who's worth $2.6 billion according to the Bloomberg Billionaires Index, of

Edited by
James E. Ellis

ILLUSTRATION BY ANNA HAIFISCH. LAMPERT: SYLVIAN GABOURY/GETTY IMAGES. CATALOG: ALAMY. DISCOVER, ALLSTATE, DIEHARD, KENMORE MACHINE: COURTESY COMPANIES. TOWER: SCOTT OLSON/GETTY IMAGES enriching himself as Sears slid into insolvency. In a court filing, creditors called Lampert's projections for the bankrupt company "delusional at best and fraudulent at worst," and its path under his stewardship "a Shakespearean tragedy."

Lampert and his ESL Investments hedge fund declined to comment. They've repeatedly denied such allegations.

"Transformco [the new name of the post-bankruptcy Sears holding company] continues to be focused on growing the many areas of our business, including building on the extraordinary connection that our customers have with the Kenmore, Craftsman and DieHard brands," a spokesperson said in a statement. Sears sold Craftsman and DieHard but still has licenses to sell the goods and develop new DieHard products.

Founded as Sears, Roebuck & Co. in 1893, the company that started as a mail-order watch and jewelry business remained the largest US retailer until almost the turn of this century. It was Americans' go-to store long before Amazon and Walmart Inc., with similar breadth and reach. But its leading days were over by the time Lampert came on the scene. Kmart Holding Corp., once America's largest discount chain, had already fallen into bankruptcy when he took it over for about $700 million in 2002 and subsequently engineered its 2005 merger with Sears.

Despite hordes of skeptics who balked at the idea of combining the two shopworn entities, there were some initial signs of optimism. Profit flowed in early years as the company slashed costs. The merchant's vast trove of real estate properties stood out as the main lure for investors, many of whom bought in on the premise that Lampert would sell them and start winding down Sears and Kmart. Instead, the retailers limped along amid years of asset sales, spinoffs, experiments—and almost $11 billion in losses during the seven years preceding its bankruptcy.

Whether Lampert had benefited from all the asset-shuffling at the expense of creditors and Sears itself was at the heart of lawsuits filed by creditors and the estate in 2019 against him and his hedge fund. Lampert had for years used his hedge fund to lend to and control Sears, while he was also the company's CEO and chair. Effectively, Sears was Lampert, and Lampert was Sears—pouring hundreds of millions of dollars into the company but also reaping hundreds of millions from interest, fees and asset sales.

The suits sputtered and stalled before they entered mediation in April. The complaints accused Lampert and his ESL hedge fund of wrongly transferring $2 billion in assets, including its Seritage Growth Properties, a real estate investment trust, before the company filed for bankruptcy. (In a countersuit, Lampert claimed that the Sears estate had in fact shortchanged him on the sale by hundreds of millions of dollars.) The $175 million settlement, reached in August, is far less than the consolidated suits from creditors and the estate had sought. The settlement included an acknowledgment by Sears that its directors and officers all acted in good faith.

Life at Sears under Lampert had been turbulent. At first, decisions that once took months could be made in the course of a meeting, and money for projects was available, according to a former executive who asked not to be identified discussing internal matters. But then there were the weekly two-hour Thursday meetings, when about 20 people would sit around in a conference room while Lampert grilled them via teleconference—sometimes even when he was on-site a couple of rooms away. He often looked down when his executives were talking and usually wasn't happy with what he heard, says the former manager, who calls it a "living autopsy."

Alan Lacy, who was the company's CEO before ▶

● Lampert

The Original Everything Store

Sears's retailing success led it into other businesses—now mostly sold off

● 1896
SEARS CATALOG

The Big Book was a shopping staple in US homes for a century

● 1913
KENMORE APPLIANCES

The brand was once a laundry and kitchen-goods powerhouse

● 1931
HOME AND AUTO INSURANCE

Sears started Allstate, named after one of its tire brands

● 1967
DIEHARD BATTERIES

A lifetime warranty helped popularize the brand, which was sold in 2019

● 1973
SEARS TOWER

The 110-story former headquarters was the world's tallest building for 25 years

● 1985
DISCOVER CARD

Sears's long experience with its store card later led it into financial services

◀ and for a few months after the Sears-Kmart merger, says the hedge fund chief's motivation for controlling Sears went well beyond the company's real estate value. Lampert "felt like: 'I want to show the retail industry they have it wrong,'" he says. "Lampert pontificated that 'retailers spent too much on marketing, advertising, stores, inventory commitments.' He felt profitability and free cash flow could be improved across the industry by spending less in these areas," Lacy says.

But Lampert, who was once hailed as a junior Warren Buffett, had trouble putting that knowledge to work, say some former managers. "Buffett found a way to have operating people work with him," says Lacy. "Buffett figured it out. Lampert never figured it out."

Besides competition from the likes of Walmart, Target, and Kohl's and the growth of off-mall retailing, Sears had lots of internal upheaval. It rolled through four CEOs before Lampert took over the job himself in February 2013. "Everybody who was CEO, including me, wasn't really CEO," says Lacy. "As the controlling shareholder, Lampert was effectively the CEO. When he finally couldn't find anybody, he took the job officially."

In early 2012 the company reported a staggering $3.15 billion loss for the previous year. A litany of transactions followed while Sears, as analysts put it, burned the furniture to keep the heat on. There were sales and spinoffs (often after attempted sales) of stores and other assets, including the Sears Canada division (which later liquidated), the valuable Lands' End clothing brand and its marquee Craftsman tool brand. Deals like that one would later form the crux of the challenge creditors raised to Lampert's purchase of Sears out of bankruptcy. The suits alleged, in essence, that Lampert had moved valuable assets out of the company knowing that Sears was insolvent and wouldn't rebound. ESL said that the claims were baseless and that all transactions were done in good faith.

Lampert got some things right: He pushed for multichannel retail before it was a mantra in earnings releases, offering the first buy-online, pick-up-in-store service beginning in 2009. Yet, Sears wasn't just another case of a buyout laboring under unsustainable debt. Its biggest problem was an unprecedented upheaval in retailing that made the venerable chain increasingly irrelevant to many shoppers. Now free of bankruptcy, that new reality still clouds its future. *—Lauren Coleman-Lochner, Eliza Ronalds-Hannon, and Erin Hudson*

THE BOTTOM LINE Once-dominant Sears has finally settled its acrimonious four-year bankruptcy battle with its former hedge fund owner. But it's now a pipsqueak in today's crowded retail field.

The Hidden Risks of Chartered Planes

● Seekers of the jet-set life at a discount price potentially face fatal consequences using illicit operators

In 2018, Marci Wilhelm, after the $195 million sale of the health-care company she'd helped found, decided to celebrate by taking a trip from her Florida home to Nantucket. She and her husband chartered a plane through Air America Flight Services Inc. and planned to stop in South Carolina to pick up friends along the way. What Wilhelm didn't know was that the plane, a Dassault Falcon 50 business jet, was overdue for dozens of

◀ Wilhelm

routine maintenance tasks and had malfunctioning brakes, and it never should've been in service, according to investigators and court records.

When the jet touched down on the runway in Greenville, South Carolina, the pilots realized something was terribly wrong. "Whoa, whoa, whoa, whoa, whoa. Where are the brakes? Where are the brakes?" said lead pilot John Caswell, according to a transcript of the black-box cockpit recorder.

The plane raced off the runway, went off an embankment and broke into pieces. Wilhelm was knocked unconscious, still strapped into her seat,

WILHELM: PHOTOGRAPH BY OCTAVIO JONES FOR BLOOMBERG BUSINESSWEEK. CRASH SITE: NTSB. DATA: FAA which was partially outside the jet. "I woke up face down," she says. She and her husband sustained critical injuries. The pilots–who lacked proper certification–died. The owner of the charter company was one of the pilots, and his sons surrendered its Federal Aviation Administration certificate days later.

Wilhelm's experience is shedding light on a dark corner of the glamorous air-charter market–where some flight operators appear to cut corners on safety–that's now drawing increasing scrutiny from US regulators. Numerous prominent passengers have traveled in recent years on charter flights that allegedly ran afoul of laws governing private air travel, including movie star Jamie Foxx; Hollywood producer Peter Guber; Major League Baseball and National Hockey League teams; and a governor, according to a Bloomberg News review of thousands of pages of government records and interviews with two dozen pilots, industry officials and US regulators. None of the travelers responded to questions from Bloomberg about their flights.

Fatal crashes, an upswing in enforcement cases, reports made to an industry tip line and accounts by legitimate operators indicate the problem has been growing, at a time when crashes of legitimate flights are at an all-time low. Disruptions to airline travel caused by Covid-19 have pushed some flyers to look for alternatives–and mobile apps make it simple to book a flight on a private plane. This hidden side of the corporate-jet world is difficult to monitor, according to industry officials and some travelers. "There are too many opportunities and incentives for people to cheat the system and take shortcuts," says Wilhelm, who's undergone 11 surgeries since the accident.

The FAA has increasingly taken legal actions aimed at penalizing operators who've allegedly sidestepped the basic legal and safety protections in federal law for paying passengers. Since it began ramping up investigations in 2018 at the request of the industry, the agency has brought civil charges alleging illegal charter operations in 24 cases and sought more than $21 million in fines.

Fifteen of the cases have come since 2021, making it one of the most common violation categories in the US aviation industry. By comparison, there were just four such cases, with proposed fines of $427,700, from 2015 through 2017.

The FAA has also referred cases for criminal prosecution. For example, a Florida man who pleaded guilty in 2018 to making hundreds of illegal flights to the Bahamas and other locations received a seven-year prison sentence.

The enforcement cases and prosecutions almost certainly represent only a sliver of the veiled charter activity, say some legitimate operators. "This goes on regularly," says Stephen Noto, general manager at Tampa-based Skyway Aviation Services Inc.

The FAA faces significant hurdles to identifying and taking action against alleged wrongdoers. "The FAA does not scare those people," says Jim Hensley,

◀ The crash site in Greenville, South Carolina

owner of America Jet Charter Inc. in Bethany, Oklahoma, and an outspoken critic of charter businesses that don't meet federal standards.

The underlying rules are simple: If a passenger pays more than a small share of a flight's costs, the operator needs to be certified as an air carrier by the FAA. There's no simple way, however, to determine who's operating a corporate aircraft.

Pilots aren't required to notify the FAA about the purpose of a flight. A business jet carrying passengers could be owned and operated privately, or could be a leased plane or a chartered flight–all of which are legal. A flight in which money changes hands without FAA approvals could appear identical. "The air traffic controllers don't know," says J.E. Murdock, who formerly served as the FAA's chief counsel. "The flight standards inspectors don't know."

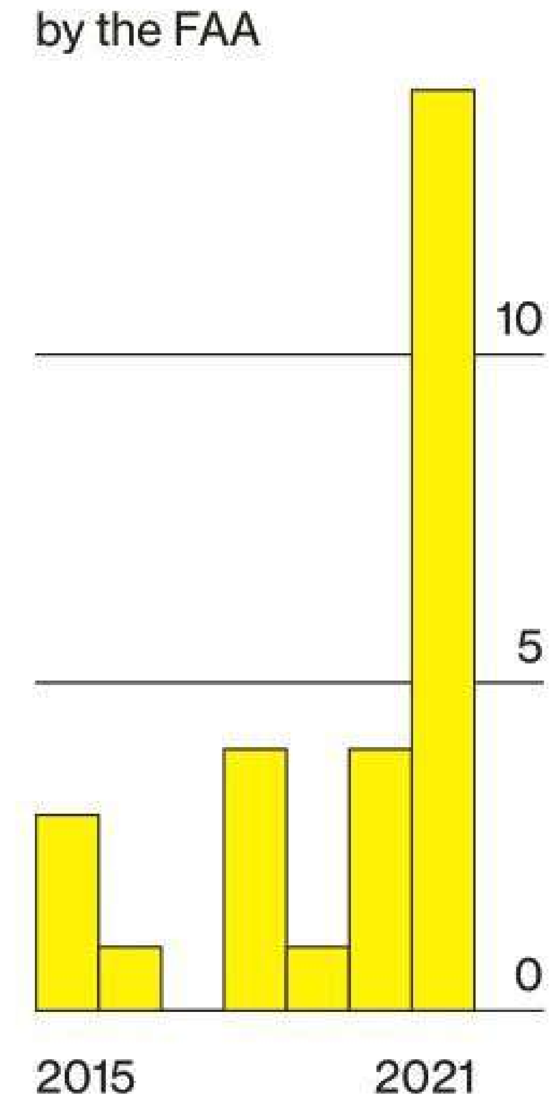
Illegal charter operations have skirted FAA-mandated maintenance standards; pilot training and examinations; limits to prevent fatigue; drug and alcohol testing; and safety standards for runway length and weather reporting, the agency said in a report to Congress last year.

By sidestepping federal safety standards, operators can significantly undercut prices charged by legitimate operators–and also avoid paying the 7.5% federal excise tax on charter flights.

"It's impossible to compete on price when the playing field isn't level," says Noto. "They can offer a competing or similar product for half the price. Unless something goes wrong, nobody ever knows it was done illegally." —*Alan Levin*

THE BOTTOM LINE The rising demand for chartered air travel is increasing the risk of passengers flying on planes that don't meet FAA standards for pilot training or safety measures.

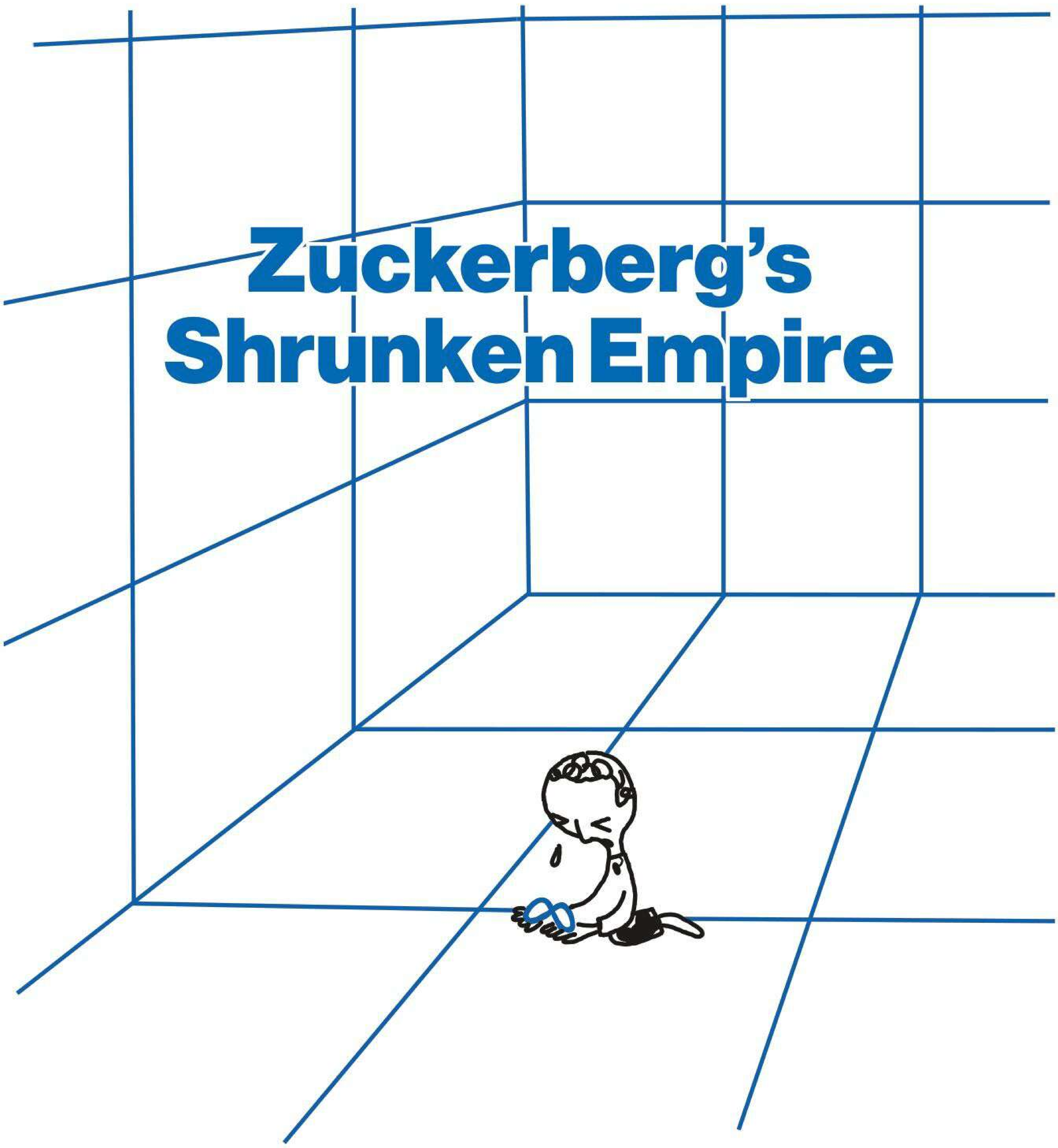
▼ Air-charter enforcement cases by the FAA



2

TECHNOLOGY

Zuckerberg's Shrunken Empire



● If it wants to build the metaverse, Meta first has to fix its once-mighty ad business

There are many reasons for the dire situation at Meta Platforms Inc. The company, which has lost two-thirds of its market value this year and cut 11,000 jobs on Nov. 9, has been battered by damaging news about the political and social impact of Facebook, Instagram and WhatsApp. Investors are skeptical of Chief Executive Officer Mark Zuckerberg's plans to pivot from social networking to the metaverse and worried about rising rivals such as Bytedance Ltd.'s TikTok. And that's to say nothing of the stresses on the broader economy and the digital advertising market.

But one factor looms above the rest: the changes to Apple Inc.'s privacy policies that have shaken the foundations of the targeted advertising industry. "Meta and lots of other tech companies are hiding underneath this big, gray cloud that's covering the economy as a whole and sort of using that as a way to hide the reality that Apple is probably doing the most damage and is putting the tightest squeeze on businesses at the moment," says Max Willens, a senior analyst at Insider Intelligence Inc. Meta's ability to recover rests largely on finding ways to operate in this new environment.

Zuckerberg's pitch to advertisers has long been that his company can guarantee that their

ILLUSTRATION BY OSCAR BOLTON GREEN

Edited by Joshua Brustein

marketing will reach the right users at Facebook and Instagram. Meta has used the data it collects about its users to help marketers pinpoint those with specific characteristics—for instance, identifying people who resembled their existing customers in key ways—and sell them specific products.

But last year, Apple changed its privacy policies in a way that significantly limited ad targeting on iOS devices, allowing users to decide whether to allow advertisers to track them. This switch made advertising with Meta more expensive, because less accurate marketers had to spend more money showing ads to the wrong type of person. Apple also prevented digital advertisers from accessing data needed to measure the outcomes of an ad after users clicked on it, making it more difficult to shift spending toward the most effective ads. In February, Meta estimated the changes would drag down revenue by $10 billion this year, or about 9% of what it's expected to bring in.

Apple has continued to make changes to its policies, taking additional cuts to money that flows through iPhones, such as on in-app purchases that users and advertisers make on social apps to boost their content to larger audiences. In October a Meta spokesperson accused Apple, which is building its own advertising business, of "undercutting others in the digital economy." Apple has maintained that its goal has simply been to protect privacy. A Meta spokesperson didn't respond to interview requests.

These changes have been a drag on the entire digital advertising industry, but they've hit Meta particularly hard. The company's revenue in the third quarter totaled $27.7 billion, 4.5% lower than the same quarter in 2021. By contrast, Google parent company Alphabet's revenue rose 6%, and revenue at smaller competitors Snap and Pinterest both increased more than 5%. Meta's and Alphabet Inc.'s share of digital ad spending in the US is expected to fall below 50% next year for the first time since at least 2019, according to Insider Intelligence.

There's still plenty of money flowing into digital ads. Spending from the largest brands rose 5% in the third quarter from the same period a year ago, accounting for two-thirds of all media buys, according to Standard Media Index. But that growth was slower than that of out-of-home venues such as billboards, subways and buses, which increased 14% from a year earlier, and newspapers, which grew 22%.

Advertisers feel as if there are more viable alternatives to Meta than there have been in the recent past, Willens says. "It's giving marketers more license to lower their spending," he adds. "Meta is going to have to recalibrate after the major go-go times of 2021 disappeared."

The company has no experience managing decline. In the past, managers have been allowed to hire employees before annual budgets were approved in the spring, according to people familiar with the matter who declined to be identified because the process was private. This year, managers were instead asked to identify their bottom performers, two of the people say, a precursor to November's job cuts. Employees have historically been able to work on passion projects, even if those projects weren't always aligned with money-making opportunities for the business, say the people. That's increasingly off the table, too.

An obvious explanation for Zuckerberg's interest in the metaverse is that Apple wouldn't wield so much power in a virtual universe where Meta controls the hardware and operating system. In the meantime, as he told employees in a message on Nov. 9, he thinks that Meta will have to be "leaner and more efficient." He's directing the company's focus on artificial intelligence tools to help it compete with TikTok while also relying on Meta's massive ad platform to fund his longer-term vision.

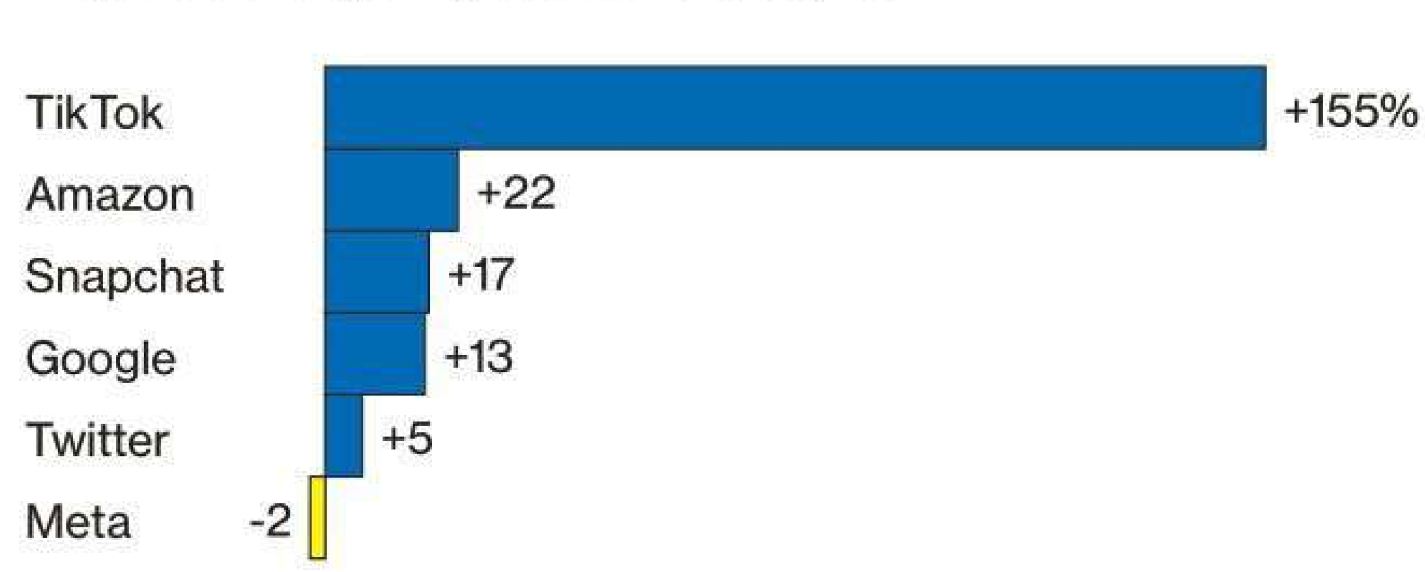
To do that, Meta is reworking its own targeting technology, using AI to determine which users should see which ads. Meta is operating two "centers of excellence for AI," one in service of the ad business and the other focused on the user experience for Facebook and Instagram, said Tom Alison, the head of the Facebook app at Meta in an interview with *Bloomberg Businessweek* before the job cuts were announced. The company has also worked to improve its ad performance tracking, which is especially important in video, because both Facebook and Instagram have prioritized a popular new short-form video format on their platforms called Reels.

A year after Apple's changes, it appears as if some of Meta's adjustments are working. In September marketing researcher Appsumer published a study on spending for more than 100 consumer apps across Africa, Europe, the Middle East and North America. The share of advertising budgets going to Meta stabilized in the first and second quarters. ▶

"Meta is going to have to recalibrate after the major go-go times of 2021 disappeared"

Meta Loses Ground

Projected change in global ad revenue, 2021-22



DATA: EMARKETER

◀ It's now about 28%, according to Appsumer, after having fallen to 24%, from 32%, in the first six months after Apple's measures took effect.

Users are watching about 140 billion videos across Meta's platforms each day. But Reels doesn't make as much money as its other products, costing Meta revenue as its audience shifts its time there. That alone cost Meta $500 million last quarter, and it will continue to be a drag for 12 months to 18 months, Zuckerberg said on the company's earnings call in October.

Meta has also been developing ads that direct Facebook and Instagram users to Messenger or WhatsApp to open a chat with the advertiser. Zuckerberg called this the company's fastest-growing ad product and said it's currently bringing in revenue at a projected annual rate of $9 billion.

Even before the job cuts, the company had already been making some changes to bring its "best people" together to work on key problems such as the AI-driven content recommendation technology, Alison said. "When we make advances in the organic product, we can then figure out what we can carry over into the ads world, as well," he said.

All this is shaping up to be a major challenge for Meta, at a period of unprecedented stress on the company. For the first time in its history, it's going to have to learn to do more with less. *—Alex Barinka, with Gerry Smith*

THE BOTTOM LINE As it slashes its workforce by 11,000 people, Meta is also working to respond to the damage Apple has caused to its business with new privacy guidelines.

Farming With Google X

● The company's famous moonshot laboratory tackles the challenges of strawberry cultivation

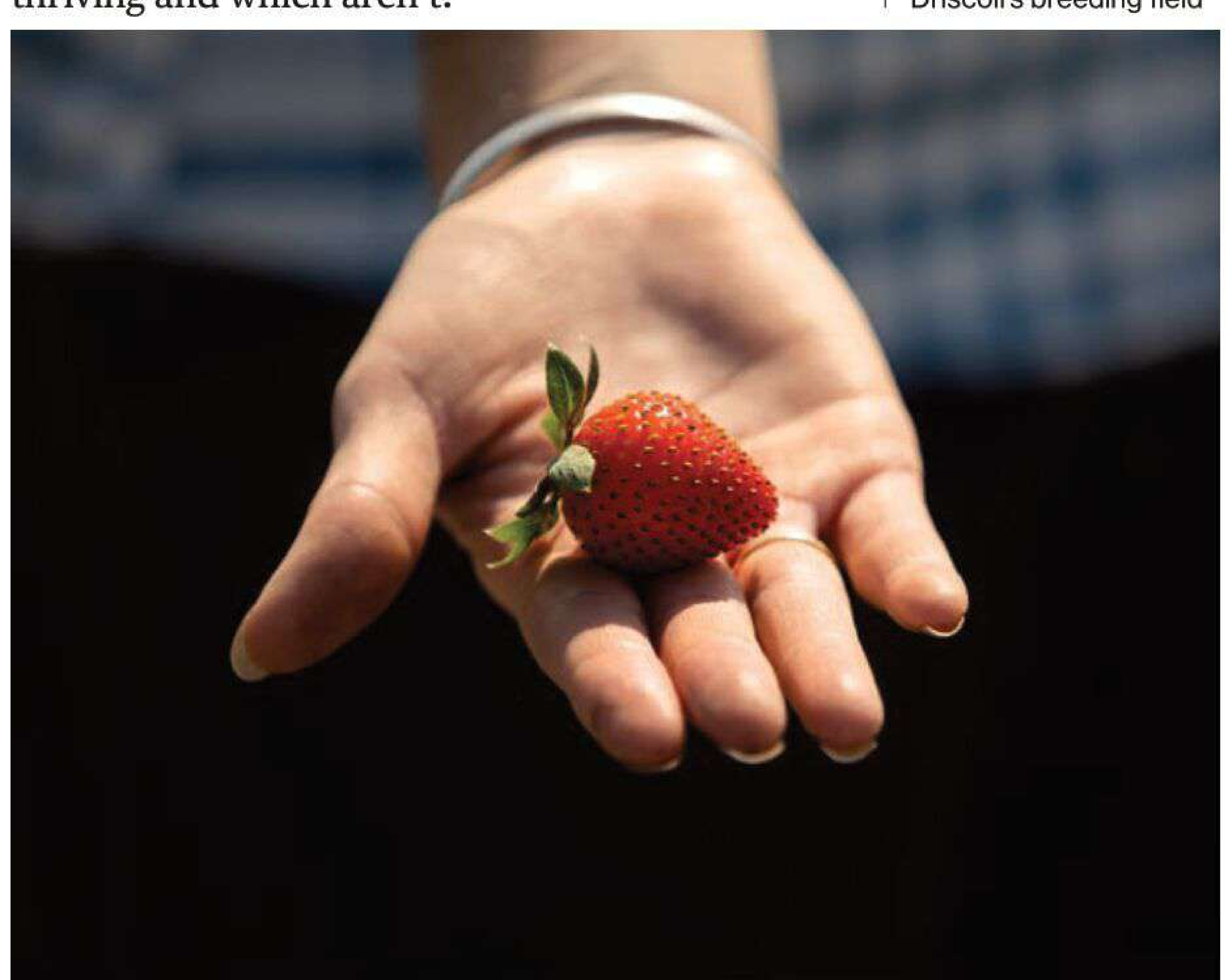
When Deb Menicos walks a strawberry field, she doesn't look at just the berries. Menicos, who holds a doctorate in plant breeding from Ohio State University and works as a senior scientist at Driscoll's Inc., will often find herself counting leaves and examining the small stalks protruding from the base of the plant. These parts, known as trusses, are important because they're where the flowers and berries grow. "We want a small plant, with compact leaves and trusses poking out–not too long, because we don't want them to touch the dirt," she says.

Developing a new berry variety at Driscoll's takes at least five years. It begins with a crop of 25,000 genetically distinct plants that grow in the company's breeding field near its headquarters in Watsonville, California. Menicos and her colleagues winnow that down first to 250 plants, then clone them and replant them, narrowing the field until they have a winner.

The goal is to make the most and tastiest berries while minimizing the cost of fertilizers, pesticides and labor. Today, determining which genetic attributes translate into the easiest plants to harvest comes down to "observations and feelings," Menicos says. "We want to have better data, more quantitative data. And that's where Mineral comes in."

Mineral is another way of saying Google. The closely guarded project grew out of an effort by X, the company's famous innovation lab, to use cameras and machine learning to help farmers make better decisions. Working with Driscoll's, Mineral's large, unmanned rovers–the vehicles are a little bigger than a Smart car and are packed with sensors and cameras–drive up and down crop rows collecting data that tell farmers which plants are thriving and which aren't.

▼ A prototype strawberry from the Driscoll's breeding field



This is known as phenotyping, and it's a huge challenge for farmers, says Elliott Grant, Mineral's general manager. "Breeders and crop researchers are still going into the fields with tape measures and notepads," he says.

Mineral's original rover, which first hit the fields in 2017, had cameras hooked into software similar to the kind Google uses for its self-driving car program, Waymo. The current version is driven by a Mineral technician, who uses a remote control; ultimately the company intends for its rovers to direct themselves. Mineral is also testing sensors that can be attached to conventional farm tractors and ways to augment that data using images from drones, satellites and even smartphones.

Along with Driscoll's, Google is testing versions of its agricultural technology with more than a dozen companies including Syngenta, the Chinese state-owned agricultural giant that develops seeds, insecticides and herbicides for staples such as soybeans, corn and wheat. Syngenta has been using Mineral's rovers to develop algorithms to identify palmer amaranth, a weed that can devastate entire farms if it takes hold. Eventually, these algorithms could allow Syngenta's customers to target their applications of herbicide instead of spraying entire fields.

Grant acknowledges that this isn't the kind of thing most people associate with Google or X. The lab rose to prominence for developing technology that seemed ripped from the pages of science fiction books. In addition to the self-driving car, there was Glass (a face-mounted computer), Loon (which used helium balloons to provide network connectivity), Wing (package delivery by drone), Makani (flying wind turbines) and Verily (a medical company that initially developed contact lenses with embedded computers). None has quite panned out. X's top executive, Astro Teller, whose official title is "captain of moonshots," says the idea for X has been to move beyond flashy innovations that don't necessarily make good businesses to more meaningful endeavors that generate revenue and–in the long run–profit for parent company Alphabet Inc. "Maybe on the surface, it doesn't look as bright and shiny," he says. On the other hand, a machine that's good at counting strawberry leaves is pretty impressive to clients who, like Driscoll's, are in the strawberry leaf-counting business. —*Max Chafkin*

▲ Mineral's Grant (left) checks a Driscoll's field with a colleague and a rover

THE BOTTOM LINE Google X's work in agriculture illustrates a broader turn toward more pedestrian projects with clearer commercial applications.

PHOTOGRAPHS BY MCNAIR EVANS FOR BLOOMBERG BUSINESSWEEK

3 FINANCE

FTX Pulls A Fast One

Edited by Pat Regnier

● Sam Bankman-Fried's crypto exchange can't pay its users. Where did the money go?

The epic unraveling of cryptocurrency exchange FTX.com has delivered many shocks: The $8 billion in liabilities it couldn't pay, its huge exposure to its own magic-bean digital tokens, the apparent misuse of customer funds and the mysterious unauthorized withdrawal that drained off a chunk of the money that remained. Even so, it could have been a lot worse: Founder Sam Bankman-Fried had been trying to expand beyond crypto enthusiasts to capture the assets of everyday savers and investors in stocks and funds. The music stopped before he could get there.

Until recently, when even some of his top deputies stopped hearing from him for long stretches of time, Bankman-Fried had been focused on creating what one of his executives called an "everything app." It would handle a person's total financial life, from crypto to equities to sending cash to friends. Already, FTX.com was offering traders outside the US crypto tokens that mirrored the performance-specific stocks. Its US arm, FTX US, launched equity trading this year.

In May, Bankman-Fried disclosed holding more than 7% of the shares of the popular brokerage Robinhood Markets Inc., leading to speculation that FTX might acquire it. His exchange plastered its name on an NBA stadium and ran a Super Bowl ad starring Larry David, while Bankman-Fried was spending freely on campaign donations and making friends in Congress. He had funding from some of the biggest names in venture capital and money management. With a vibe that was more online brokerage than Bored Ape—and a name that didn't even nod to crypto, bits or coins—FTX seemed to be normalizing digital assets.

What its customers got instead was a depressingly common crypto experience: wealth that's been frozen or lost and the sinking realization that they trusted the wrong people. On Nov. 11, FTX.com, FTX US, Bankman-Fried's crypto hedge fund Alameda Research and about 130 related entities declared bankruptcy. Traders don't know when or whether they'll get their money back.

It's an echo of the failure of crypto exchange Mt. Gox in 2014 and of digital lender Celsius Network Ltd. just a few months ago. "The company and Sam Bankman-Fried seemed trustworthy," customer Justin Zhang, a 34-year-old engineer in Los Angeles, told Bloomberg News. He had $11,000 worth of assets at FTX US. "I thought FTX US was different because of all the regulations put in place, but it's not."

In truth, though FTX US emphasized its regulated status, crypto investors in the US lack many of the protections they take for granted with banks or even stock investments. And FTX US was still a relatively small (and supposedly distinct) part of Bankman-Fried's empire; the far larger global exchange FTX.com was based in the Bahamas, where trading rules are looser. But customers can hardly be blamed for thinking FTX and Bankman-Fried, widely known as SBF, were on the up and up. "SBF had the reputation of being crypto's legitimate, reliable, good guy," says Hilary Allen, a law professor at American University Washington College of Law, who's raised concerns about the risks of crypto. His ventures "were seen as more responsible, more establishment players than most other members of the crypto industry."

Until they weren't. On Nov. 2, the online news site CoinDesk reported on a leaked balance sheet of Alameda, Bankman-Fried's ostensibly separate trading firm. The document showed that a significant portion of Alameda's assets were in a crypto token called FTT, which is issued by FTX. The tokens weren't exactly shares of stock in FTX—their value was that FTX traders could use them for discounts on trading fees and other perks. Yet it was odd to see Alameda, reputed to be one the most sophisticated traders in crypto, amassing a coin its own founder minted from thin air.

Things came apart quickly from there. Rival exchange operator Binance also held a lot of FTT tokens from a past investment in FTX. Owner Changpeng Zhao announced on Twitter that he'd be selling because of "recent revelations." That sparked the crypto equivalent of a bank run. The value of FTT plummeted as traders rushed to sell it, while FTX was slammed with withdrawal requests. On Nov. 8, Bankman-Fried announced that Binance would be taking over FTX to protect customers' assets; the next day Zhao pulled out of the nonbinding deal, and it became apparent that FTX.com was in far deeper trouble. It owed billions of dollars more than it could pay.

If an exchange is simply holding assets on customers' behalf or acting as middleman for trades, it shouldn't have a problem dealing with their withdrawals. The details of why FTX.com came up short are still emerging, but the *Wall Street Journal* and Reuters, citing unnamed sources, reported that it had moved $10 billion of its customers' assets to Alameda. The *Journal* wrote that Alameda had borrowed money to make investments, then turned ▶

"There's no question that it was wrong and dishonest and incredibly risky"

PHOTO ILLUSTRATION BY 731; SBF: LAM YIK/BLOOMBERG

◀ to FTX to help it make payments on those loans. Alameda's FTT stash may have been a form of collateral on the money it now owed FTX. That was dangerous, because FTT tokens could be hard to sell if investors became worried about FTX. To strip away all the financial and crypto jargon: It looks like Bankman-Fried mixed up customers' money with his own and then lost it.

On Twitter, Bankman-Fried said that he "fucked up" and blamed "poor internal labeling" of accounts. He later told the *New York Times* that Alameda took out a large loan from FTX for risky investments but didn't comment on whether it misused client funds. "I have a sense of what likely happened, but nobody outside of SBF and those companies knows what was really going on," says Robert Zagotta, chief executive officer of Bitstamp USA, a crypto exchange. "But there's no question that it was wrong and dishonest and incredibly risky. And affected customer funds."

Why were people so ready to give money to Bankman-Fried? It helped that he was a character. Just 30 years old, he was famous for his unkempt, curly mane and the uniform of T-shirts and shorts, which he even wore onstage with Bill Clinton and Tony Blair at an FTX-sponsored conference in the Bahamas in April. That's standard stuff in the age of the CEO hoodie, but it made him look like someone who knew a thing or two about an asset class built on code. His sudden wealth didn't hurt with that, either. Until the moment it all came apart this month, his net worth was more than $15 billion. (It's roughly zero now.)

More important, he gave people what they needed. With journalists, he was quick to respond to emails and messages and provided clear explanations of what was happening in the crypto world. He could be disarmingly frank: In an interview on Bloomberg's *Odd Lots* podcast in April, he seemed to concede that many digital tokens were essentially Ponzi schemes. He described investments that were like boxes with no inherent value—people put their money in the boxes assuming other people would put even more in. He called this "magic."

To politicians, he not only offered campaign cash but a blueprint for how they could flex their legislative muscles. Instead of the usual libertarian calls to keep the government out of crypto, he pushed legislation giving the US Commodity Futures Trading Commission more oversight. Notably, empowering the CFTC might also hem in the US Securities and Exchange Commission, which has recently taken a more aggressive stance on digital assets.

Outside of politics, Bankman-Fried promised to give almost all of his wealth away. The son of Stanford law professors, he was a backer of "effective altruism"—a movement, rooted in utilitarian philosophy, that says people should rigorously measure how they can do the most good. His philanthropy signaled both confident wealth and a kind of intellectual sophistication. The team that ran the FTX Foundation's charitable Future Fund has resigned. "We are devastated to say that it looks likely that there are many committed grants that the Future Fund will be unable to honor," the team wrote in a post on an effective altruism forum.

For venture capital investors in Silicon Valley, Bankman-Fried was the ultimate cool kid. In a now-deleted article published on the website of Sequoia Capital, one of FTX's biggest backers, partner Michelle Bailhe was quoted enthusiastically describing how Bankman-Fried impressed the firm during a video call, even though he was playing the online game *League of Legends* the whole time. "It was one of those your-hair-is-blown-back type of meetings," she said.

● Liabilities FTX is unable to pay

$8b

The backing of big names enticed more investors. "As far as I can tell, the extent of the diligence was 'The kid went to MIT, talks fast, sleeps on a beanbag chair and Sequoia is in,'" says Matt Walsh, founding partner of crypto VC firm Castle Island Ventures. He says that for many venture investors unfamiliar with digital assets, FTX was their first crypto deal, and they were eager to capitalize on rising interest in Bitcoin and decentralized finance. Fear of missing out resulted in investors giving FTX close to $2 billion and valuing the crypto exchange at $32 billion in its last funding round in January, according to data from PitchBook.

Bankman-Fried also spoke Wall Street's language. After earning a degree in physics, he worked at Jane Street, a storied quantitative trading firm. He founded Alameda out of his apartment in 2017 and began with trades that took advantage of the fact that cryptocurrencies often sold for different prices on different exchanges. Traditional finance people who couldn't care less about blockchains or the legend of Satoshi Nakamoto *love* traders who can spot an arbitrage opportunity.

By 2019 the firm was handling about $1 billion in trades daily. That same year, Bankman-Fried started FTX in

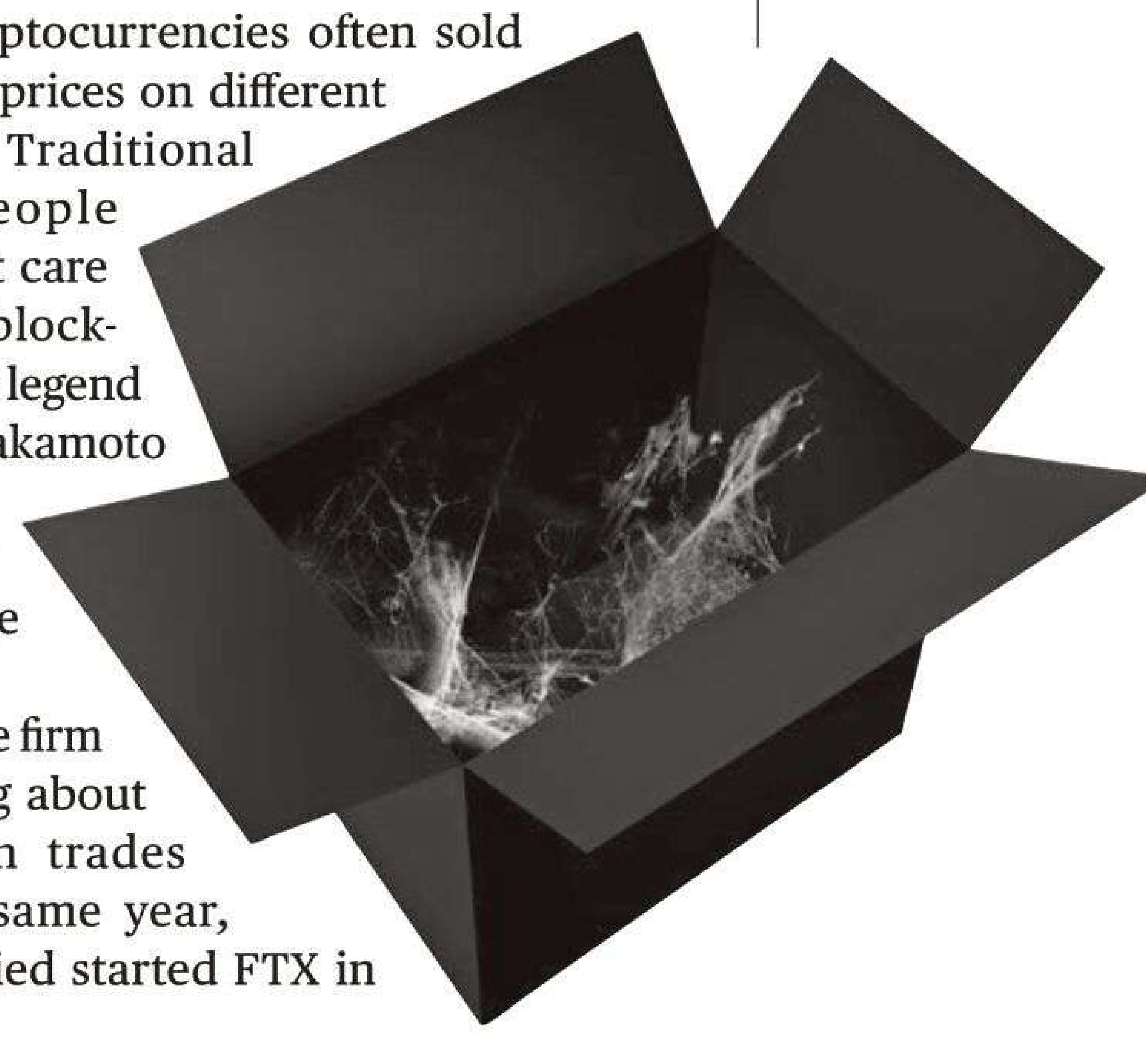


PHOTO ILLUSTRATION 731; PHOTOS: SHUTTERSTOCK (2); DATA: COMPILED BY BLOOMBERG

Hong Kong, and it developed a following among sophisticated traders with a taste for risk. "FTX was also useful for institutions," says Campbell Harvey, a finance professor at Duke University. "Indeed, the very genesis of FTX was to provide a low-cost trading venue for his hedge fund Alameda."

It went well beyond that. FTX's offshore trading platform listed hundreds of smaller, obscure coins and until 2021 allowed traders to leverage their investment up to 100 times. It then cut the limit to 20 times, which still meant that a tiny move in a token's price could make a fortune or cause a trader to lose everything. "If they were operating in the US, they would have been shut down years ago," says Edward Chin, CEO of Parataxis Capital, a digital-asset investment firm. The offerings on FTX US were tamer.

Even before FTX's collapse, many questioned the relationship between FTX.com, a coin trading venue, and Alameda, a major trader of coins. "In hindsight it seems obvious that it is a bad idea for a hedge fund to be so connected to a specific exchange," Harvey says. Bankman-Fried, who owned more than 50% of FTX and nearly all of Alameda, insisted that the operations were kept separate so the hedge fund wouldn't have an unfair advantage. But the firm was housed in the Bahamas on the same corporate campus as FTX, and until recently, Bankman-Fried lived in an apartment with several roommates including Alameda CEO Caroline Ellison.

Alameda was thought to be largely a market maker—instead of betting on crypto prices moving one way or another, it stepped in to make it easier for other traders to buy and sell tokens. It could earn money on the spread between what buyers were willing to pay for a coin and what sellers were willing to take. But one professional trader, who asked not to be named discussing confidential arrangements, says Alameda was operating more like a risk-taking fund that made directional bets on tokens.

This spring the crypto market was shaken by its own 2008-style financial crisis. A popular stablecoin called TerraUSD, which was supposed to always be worth about $1, crashed to 2¢. A major crypto hedge fund called Three Arrows Capital collapsed. Prices of digital assets crashed, and a contagion began to take down crypto companies. Bankman-Fried stepped in, playing the role of the industry's deep-pocketed lender of last resort. Alameda extended an emergency credit line to Voyager Digital Ltd. in a deal that failed to save the troubled crypto brokerage. And FTX US bailed out digital-asset lender BlockFi Inc., which took an $80 million hit from bad Three Arrows debt. FTX US extended BlockFi a $400 million credit line and got an option to buy it. (BlockFi has suspended customer withdrawals, citing a "lack of clarity" on the status of FTX.)

Many assumed Bankman-Fried was funding his spending and lending in part from profits he made at Alameda. In the end the hedge fund was leaning on FTX. Now there's a giant hole where FTX customers' money used to be. Some of it could be recovered in bankruptcy, but it's not looking good. A bizarre spreadsheet shared with potential investors a day before FTX's filing shows it owed $8.9 billion but held only $1 billion in immediately liquid assets, including Robinhood shares, dollars and stablecoins. The largest of its "less liquid" assets was more than $2 billion of Serum, a token issued by a decentralized finance project that FTX and Alameda had helped create. Today the total market value of all the Serum in circulation is around $75 million. A source familiar with the balance sheet said the document, which was first reported by the *Financial Times*, might not provide a full, granular picture, but that nothing significant was left out.

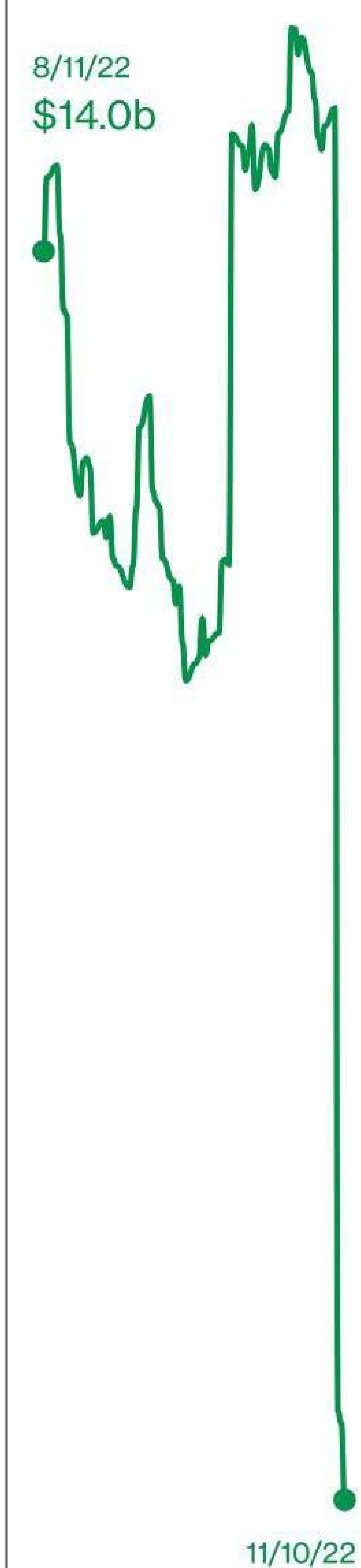
A note appended to the spreadsheet read, "There were many things I wish I could do differently than I did, but the largest are represented by these two things: the poorly labeled internal bank-related account, and the size of customer withdrawals during a run on the bank." Another cryptic line showed a negative balance of $8 billion dollars in the "hidden, poorly internally labeled" account and customer withdrawals of $5 billion the previous Sunday.

Shortly after FTX filed for bankruptcy came another massive hit. Someone made unauthorized withdrawals of crypto worth more than $400 million. FTX said it was launching an investigation into the suspected theft with law enforcement.

Looking at the smoldering wreckage of Bankman-Fried's empire, people in the industry hold out hope that there's still a mainstream future for crypto. Maybe the mess will speed up regulation to protect investors. Or perhaps it demonstrates what many boosters think is the true path to decentralized enlightenment: Instead of trusting third parties like FTX, more investors could follow the motto "Not your keys, not your coins" and keep their assets in wallets they control. Zagotta says Bitstamp has heard from longtime clients who want to see its financial details, and that's healthy. But he acknowledges the damage. "You have someone who is buying Super Bowl ads and stadium names and is a PR machine not managing the integrity of operation," Zagotta says. "That's incredibly frustrating. That's not what we need right now."

Worse, there's fear of another contagion in crypto markets. Digital-asset brokerage Genesis halted redemptions in its lending business, and Gemini ▶

▼ Bankman-Fried's net worth



◀ Trust Co. said one of its products, which pays yields on crypto deposits, will delay withdrawals.

When Bankman-Fried suggested on the *Odd Lots* podcast that many coins were essentially valueless, he wasn't saying anything most people didn't already think. But many saw a distinction between the coins FTX users bet on and the business Bankman-Fried was building. He appeared to be creating a more efficient platform for trading things, on faster, blockchain-powered rails, and many people in finance, Silicon Valley and Washington saw promise there. His fall is a reminder that an asset that draws people looking for fast, potentially life-changing gains also has a way of attracting predators. Whether it was fraud or a fiasco, behind FTX's sleek trading tools was another gambler willing to be reckless with other people's money. *—Olga Kharif, Yueqi Yang and Hannah Miller*

THE BOTTOM LINE FTX was pushing to make crypto mainstream. The damage its founder caused investors could have been much worse if he'd had more time.

We Don't Talk About Sam

● FTX was wining and dining its way to becoming a player in the futures industry. It made for an awkward convention

Everywhere you looked, there it was, the ghostly outline of three letters: FTX.

The Futures Industry Association conference in Chicago this month was supposed to be another celebration for the golden boy of markets, Sam Bankman-Fried. At a previous FIA confab in March in Boca Raton, Florida, his FTX crypto exchange flexed its platinum status by hosting a late-night cocktail party by the beach, holding a fireside chat with former baseball star Alex Rodriguez and handing out branded swag from its tricked-out megabooth in the exhibition hall. Bankman-Fried brought pizazz to an industry that lacks fleets of Lamborghinis and is filled with job descriptions such as "exchange operator" and "risk manager" and "commodities regulator."

Now it's strikingly obvious that FTX ran its business quite differently from everyone else in the room. In the days before the Chicago conference began, FTX collapsed when it was revealed that it owed its customers billions of dollars more than it could pay. Conference staff papered over the FTX name on banners in the lobby. But they couldn't fully erase the fact that many sophisticated finance pros were duped by Bankman-Fried's wacky charm and lavish spending.

"There are a few people in the industry that need to think hard about how someone can appear from nowhere and become the primary sponsor when others have been around for 20-plus years," says Keith Todd, chief executive officer of Trading Technologies, a futures trading platform. "This is a wake-up call. The adults need to run this industry. We need innovators but also adults."

Had things gone a bit differently, Bankman-Fried could have radically altered not just the crypto ecosystem but also the futures market that touches all corners of finance, many longtime industry professionals say. The derivatives, which are contracts that allow traders to lock in a set price for an asset at a future date, are a critical tool for traders and for any business that might need large amounts of a commodity like oil–think airlines–and for farmers, who are up against the caprices of weather and pests.

FTX's ambitions were big: Its US arm wanted to handle every aspect of customers' crypto derivatives needs on its own, using algorithms rather than brokers to help clear trades. Although it was focused on futures for digital assets, it pointed to a new way of carrying out derivatives trades. FTX

"The adults need to run this industry"

ILLUSTRATION BY 731; PHOTOS: LAM YIK/BLOOMBERG, GETTY IMAGES quickly became a big presence in a staid industry.

Bankman-Fried was pushing to take out the middlemen in crypto futures trading—who are specifically tasked with offsetting risk. At the heart of the proposal was margin, a favorite tool of investors who want to use borrowed money to amplify the risk and reward of their bets. FTX US said it would post $250 million of its own money to shore up losses if buyers or sellers couldn't uphold their end of a deal. The approach would consolidate power in the hands of FTX and the supposedly sophisticated technological surveillance tools it had in place to manage risk.

It was vastly different from the system used elsewhere in derivatives markets, requiring that members pitch in money to a communal fund to cover defaults. It won praise from a venerable group of financial industry titans. Fidelity Investments, Fortress Investment Group, Susquehanna International Group and Virtu Financial were among the hundreds who sent letters to the US Commodity Futures Trading Commission in support of Bankman-Fried's vision.

The old guard of the derivatives industry, including heavyweights CME Group Inc. and Intercontinental Exchange Inc., and the FIA itself, were aghast at FTX's brazen pitch and stunned at the outpouring of praise. The two exchange operators had their own motivations, of course: The proposal could be a threat to their bottom lines. Both offer trading in crypto futures. But more urgently, as the two companies stressed to regulators in strident comment letters, it could also introduce undue risk into the whole marketplace.

Their comments, which are looking more prescient by the day, raised alarms about the ties between FTX and Alameda Research, Bankman-Fried's crypto trading firm. The *Wall Street Journal* has reported that Alameda used FTX customer funds to make loan payments as the crypto market crashed earlier this year.

In Boca Raton eight months ago, Bankman-Fried wandered the white halls of the resort in his khaki shorts and FTX T-shirt. Guests gawked at and fawned over him. One attendee remembers angling for a handshake, only to be admonished by a handler, who said the crypto visionary didn't like touching. Still, his affable, open-book attitude was out in full force. He happily answered questions on the sidelines as he bounced to and from meetings and panels.

Sponsoring FIA conferences was a way for FTX to corner the wonks in one place, familiarize them with FTX over a drink or two and even get a chance to influence the content. Platinum sponsorship costs about $25,000 to $30,000, according to FIA's website, and, depending on the event, it can reach north of $50,000—chump change by the standards of crypto when it was riding high. The events offered a way for FTX to come off as an approachable and legitimate player in derivatives, rather than an unknown platform throwing off cash from the Bahamas, where FTX is based.

Unlike crypto, futures is a tough industry to crack. ICE's origin story begins in 1997. CME's roots extend all the way back to 19th century grain markets in Chicago. FIA conference attendees are fine-print readers whose jobs rely on predicting worst-case scenarios, including how market blowups happen. Regulators know their names and care about their opinions.

Walt Lukken, FIA's president, says he hadn't heard of Bankman-Fried until last year. When the crypto hero made the cover of *Forbes* and bought LedgerX, a digital currency futures and options exchange, Lukken started to pay attention. "There are no regrets—we always are looking for innovators, people who are coming into our space to bring new ideas," he says. "It's just incredibly disappointing if it turns out to be true that there is fraud coming out of this."

Bankman-Fried's disheveled look and disregard for norms irked more than a few people, including longtime CME CEO Terry Duffy. The two clashed in a heated discussion at the Boca Raton event that lasted more than an hour, Bloomberg News reported. The spat was largely brushed off back then.

As part of a buying spree when crypto markets were plunging in the spring, FTX also acquired a young clearing firm called Embed. Clearing firms are yet another piece of market structure that exist to keep trading risks in check.

In the ground-level exhibition hall at the Sheraton Grand Chicago Riverwalk, participants still couldn't quite believe that they had been so close to having Bankman-Fried again strolling the hallways and stealing the show. Near the short rib macaroni and cheese congealing in a chafing dish at the after-hours drinks reception, attendees wondered aloud what consequences Bankman-Fried and his associates would face. Despite the conference organizers' best efforts, some of FTX's fingerprints remained. There'd been no time to reprint the programs. FTX appeared alongside CME and Barclays Plc on the back cover. —*Annie Massa, Katherine Doherty and Isis Almeida*

THE BOTTOM LINE FTX wanted to streamline crypto futures trading so that it would manage its customers' risk by itself. The downside of that just became a lot more obvious.

Broken Britain

● After a decade of austerity that devastated public services, the UK is bracing…for more austerity

Satvir Kaur gets angry when she recalls her childhood in the 1990s in Southampton, on the south coast of England. "As an average inner-city kid who grew up on free school meals, I relied heavily on my local youth center," the 38-year-old says. But today, after 12 years of austerity programs enforced by successive Conservative governments in London, "not only can the school not afford those activities for my nieces and nephews, but that youth center is run by a local charity, which is equally struggling."

As head of Southampton's Labour-led council, Kaur isn't just watching her community suffer from the cuts. She now has to make them. The council must find savings of almost £1 million ($1.2 million) a week in 2023-24 to fill a shortfall in its £225 million budget amid soaring inflation and growing demand for services—what Kaur calls "austerity on steroids."

And it's not just opposition-led places that are reeling. Two Conservative-run county councils nearby warned that they face bankruptcy because of "budget deficits over the next few years of a scale that has never been seen before."

Public services in Britain are, in essence, crumbling. In recent years, English schools have needed some £11 billion in repairs that haven't been made, according to a 2021 government report. There is an estimated £13 billion backlog of urgently needed roadwork. For hospitals, the figure is £10 billion.

Yet the new Conservative government of Prime Minister Rishi Sunak—who also hails from Southampton—was scheduled to unveil a budget on Nov. 17 to plug a £55 billion fiscal hole via tax hikes and a raft of new cuts: a declaration that austerity is back.

Critics, though, say there's little left to slash. Across the UK, social-care funding is being squeezed, along with the wider preventative community services on which social workers depend. Inflation—which hit 11.1% in October—and rising interest rates have sparked numerous industrial actions. Train drivers, nurses, teachers, postal workers, lawyers, civil servants and more are striking or threatening to do so.

Although health and education were largely shielded from the worst of any budget squeeze, service levels risk being further degraded as hospitals and schools try to fill gaps left by cuts elsewhere and must deal with funding that's falling in real terms due to rising inflation. "This has been a lost decade for public services," says Nick Davies, program director of the Institute for Government think tank.

When Britons went to the polls in 2010, they ▶

◀ Southampton must find savings of £1 million a week.

MARY TURNER/BLOOMBERG

Edited by David Rocks

◀ knew that whichever party won, they would get what former Conservative leader David Cameron dubbed an "age of austerity." Faced with the aftermath of the financial crisis and the subsequent banking bailout, the then-Labour government had promised to find savings equivalent to 4.7% of gross domestic product. After the Conservatives won, Cameron's coalition government ran with the idea. By the time austerity ended in 2018, the total fiscal consolidation amounted to 8.8% of GDP. The sustained cuts to public-sector wages, working-age welfare payments and public services were unprecedented, hitting society's poorest people the hardest.

The Institute for Government found that from 2010 to the onset of the Covid-19 pandemic in 2020, elective surgery backlogs grew, the number of police officers fell by 17%, spending on community centers and libraries dropped by as much as half in some places, assaults on prison staff jumped, and the number of judges shrank.

Increasingly, charities and volunteers are stepping in to provide services that once came from the government. Eliza Rebeiro in 2007 founded a group called Lives Not Knives in the south London borough of Croydon that focused on preventing knife crime. But the decline in care for young people means she's been forced to broaden her focus. "We are having to train our staff in mental health first aid, in understanding sexual violence, in all of these other things because we're getting a lot more pressure on our services from kids needing help—whether they are involved in knife crime or not," she says.

It's a similar dynamic in health care, where the protected budget doesn't tell the full story about the erosion of services. Mark Dayan, a policy analyst at health think tank the Nuffield Trust, says council cuts to social budgets have led to overcrowding in hospitals as patients with no place else to go end up staying longer than necessary. "That physically uses a lot of space, and it uses a lot of staff who are required to cover people in those beds," he says. "But they're not patients who actually need to be in hospital."

Ahead of the budget, Sunak faced an uncomfortable dilemma: how to explain the need for a new round of austerity without blaming his own party's record over the past 12 years. Pointing the finger at Russia's war in Ukraine goes only so far. At any other time, the government would cushion the blow by increasing debt. But with the danger of higher repayment costs through increased bond yields after the chaos his predecessor Liz Truss managed to create during her brief time in office, Sunak's priority was fiscal credibility. So that meant further cuts in services.

Local activists argue that the loss of more funding will leave the most vulnerable people at risk of falling through the cracks. More cuts will, almost inevitably, translate into greater pressure on health care, schools, charities and volunteers. "Local government has shown it's really efficient at making massive savings," says Lorna Fielker, cabinet member for health, adults and leisure on the Southampton council. "But there's nothing left down the back of the sofa apart from lint and biscuit crumbs now." *—Emily Ashton, Philip Aldrick and Stuart Biggs*

THE BOTTOM LINE English schools need £11 billion in maintenance, and there's a £13 billion backlog of urgently needed road repairs. Now communities are bracing for more cuts.

▲ A Southampton community center where residents can find food and shelter


● Sunak

Challenging China on Chips

● After promising a less polarizing stance on China, Biden is forcing friends to pick sides

Coming into office, President Joe Biden pledged to abandon Donald Trump's with-us-or-against-us approach to China. But sweeping new curbs on the sale of semiconductors and chipmaking equipment to the country are riling Beijing while making key US allies choose sides.

The export controls require American chip companies to get a Department of Commerce license to sell certain advanced products in China. Since early October, US officials have repeatedly said that if allies don't align with Washington on the latest rules, they might face a ban on sales of

MARY TURNER/BLOOMBERG; NO. 10 DOWNING STREET; KEVIN LAMARQUE/REUTERS foreign chip equipment that contains even a small amount of American technology. Despite the relatively friendly tone of Biden's Nov. 14 meeting in Indonesia with Chinese President Xi Jinping, the chip curbs show that the White House still wants to slow China's progress in cutting-edge technologies.

As the Biden administration considers expanding the restrictions, it's far from certain that the US's friends will play along, according to government and industry officials who asked not to be named so they could speak freely. The Netherlands, home to ASML Holding NV, which has a virtual monopoly on a machine needed to make the most advanced chips, thinks the US is acting like a bully, and Japan—where another key industry player, Tokyo Electron Ltd., is based—feels the administration is disregarding its sovereignty, according to people familiar with the matter in both countries who asked not to be named because the issue is sensitive. "This package is replete with unilateral measures with very big assumptions that partners will follow the US's lead," says Reva Goujon, director of China corporate advisory at Rhodium Group.

The US has said the export control rules will lose their effectiveness if its partners don't join in, but by basically forcing governments to comply or face penalties, the White House is alienating countries in Europe and Asia that are less willing to confront Beijing. The Biden administration thinks it can persuade the Netherlands and Japan because they share US concerns about security, according to a person familiar with the talks. Although the negotiations will be difficult, the administration is optimistic it can eventually reach a deal, the person says. The tone of the talks has shifted since Oct. 7, after the White House made clear it's willing to disadvantage American companies in the short term to further the countries' joint security interests. The National Security Council declined to comment.

As Dutch Prime Minister Mark Rutte prepared for a Nov. 17 visit to Seoul, he said export controls would be high on the agenda. The Netherlands is coordinating with South Korea, Japan and the US, Rutte told Bloomberg Television on Nov. 7. A de facto ban is already in place on ASML's cutting-edge "extreme ultraviolet lithography," or EUV, machines, because the Dutch government hasn't given the company a license to ship them to China. Although the Netherlands has concerns about doing business there, Rutte said it's important to maintain a dialogue with the world's No. 2 economy. "We should not be naive," he said. "The issue of tech and also the export of the latest technology itself is a legitimate debate."

Behind the scenes, frustrations are palpable. People familiar with the Dutch government's thinking said it was easy for the US to impose controls on China, but they force the Netherlands to navigate an extremely sensitive path. ASML hinted at resistance in October's earnings call, when Chief Executive Officer Peter Wennink said "as a European-based company with limited US technology in our systems, ASML can continue to ship all non-EUV lithography systems to China out of the Netherlands."

In talks early this year, Japan and the Netherlands were ready to formalize multilateral controls that would ban China's access to equipment capable of making 5-nanometer chips, which are one generation behind today's most advanced

◀ The tone in Indonesia was friendly, but Biden has made it clear he won't let China get ahead of the US in tech

technologies. But the talks collapsed when the US sought to include older technologies that would have a bigger impact on chip companies' sales to China. Since then, Japan and the Netherlands have resisted US demands on chip curbs and sought to persuade others not to give in. ASML declined to comment for this story. Tokyo Electron said the company won't discuss government actions. Rutte's office also declined to comment.

The chip measures mark the advent of what US National Security Advisor Jake Sullivan calls a "decisive decade" in competition with China in computing, biotechnology and clean energy tech. That heralds further export controls, and Xi has vowed to push back and "resolutely win the battle."

All of which means life will become harder for countries such as South Korea, India, Singapore and Malaysia, which are already walking a fine line in seeking constructive relations with both Washington and Beijing, says Ja Ian Chong, a political science professor at the National University of Singapore. "It's very difficult for countries caught in this crossfire to extricate themselves," he says, "whether they'd like to choose sides or not." *—Bloomberg News*

THE BOTTOM LINE The US says it needs its partners to help enforce its export rules, but the White House risks alienating countries in Europe and Asia that are less willing to confront China.

Protecting European Energy

An attack on Baltic pipelines has spurred an effort to bolster security of the region's infrastructure

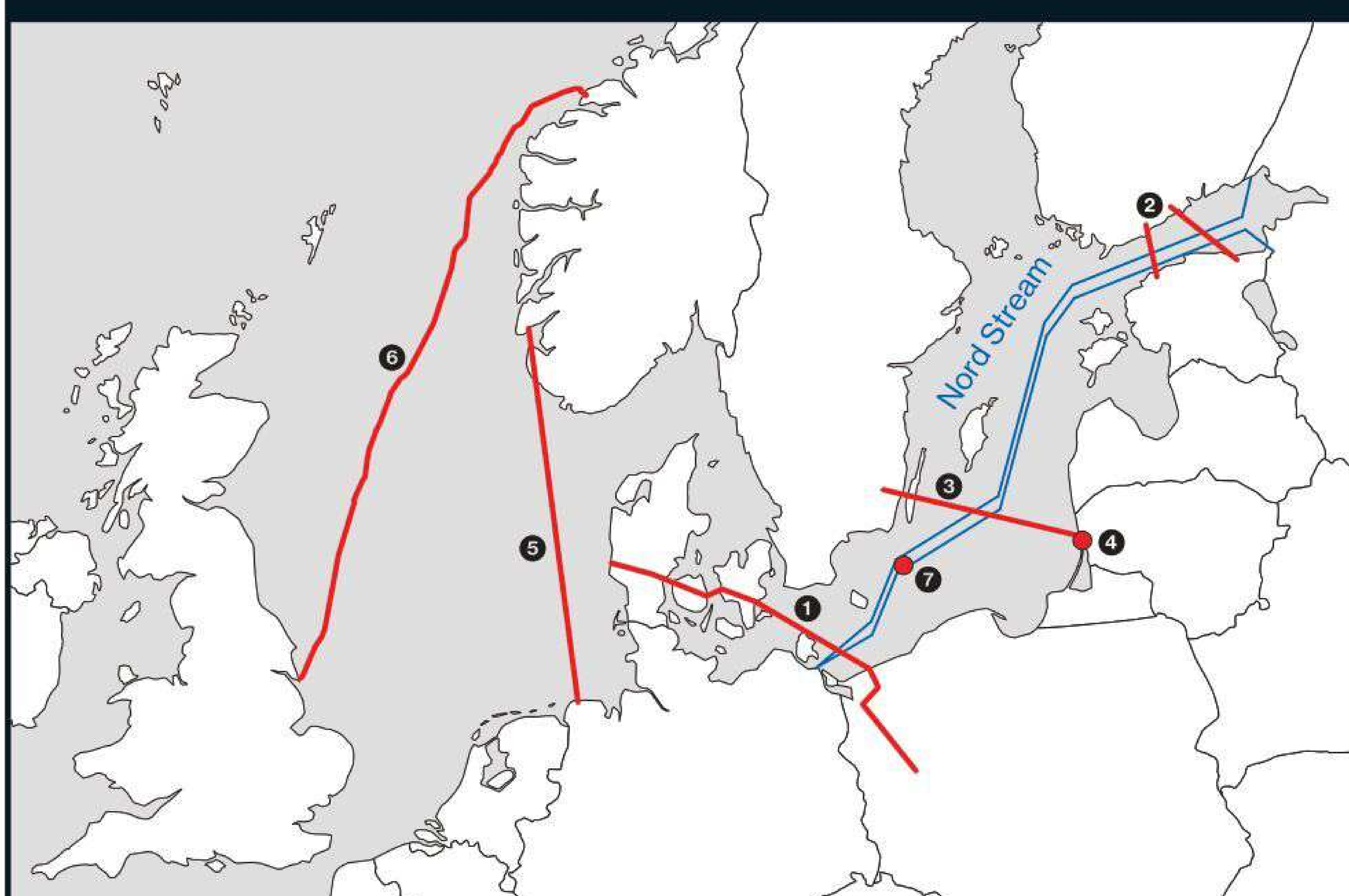
On Sept. 26, seismologists detected a series of explosions that were quickly traced to the floor of the Baltic Sea. It soon became clear that the blasts had severed the Nord Stream 1 and 2 gas pipelines linking Russia with Germany. Many in the business suspected Russian President Vladimir Putin was responsible—something the Kremlin denies, instead blaming "Anglo-Saxons."

The damage highlighted the vulnerability of Europe's energy networks, which came into sharper focus in the following weeks as radio cables in Germany were cut, halting rail service for hours, and Norway began detecting "abnormally high" drone activity near its offshore energy installations. "We have seen a number of very strange physical attacks," says Evangelos Ouzounis, head of policy development at the European Union's cybersecurity agency. "The energy network is vast, and you cannot protect it physically."

The pressure increased on Nov. 15 when a rocket struck a village in Poland, a NATO member, sparking concerns that the conflict could widen. Since the Nord Stream attacks, NATO members have increased monitoring with satellites, aircraft, ships and submarines, setting up something like an anti-drone shield for the North and Baltic seas. And the UK says it will invest in special ships to help secure undersea pipelines and data cables. "Russia wants to push the envelope and test the resolve of NATO," says Kristine Berzina of the German Marshall Fund in Washington.
—*Natalia Drozdiak, Anna Shiryaevskaya and Todd Gillespie*

After the Nord Stream blasts, thousands of tons of methane bubbled to the surface over several days

The Most Vulnerable Sites



❶ BALTIC PIPE
The pipeline can carry up to 10 billion cubic meters (353 billion cubic feet) of gas annually from Norway to Poland, via Denmark. It was inaugurated the day of the Nord Stream explosions and allows Poland and the Baltic states—all vehement opponents of Russia's invasion of Ukraine—to diversify energy supplies. Although its capacity is only a tenth of Nord Stream's, every bit counts as energy prices in Europe stand at roughly four times historical levels, despite above-average temperatures that have cut demand recently. A break in the system would be a tough blow for Poland, which has little gas storage. And it would be an indirect hit on Ukrainians, about 1 million of whom have sought refuge in Poland.

❷ ESTLINK AND
❸ NORDBALT
Cutting these undersea electricity cables would be both disruptive and highly symbolic, isolating the former Soviet Baltic republics from the European grid in Finland and Sweden, which have ended decades of neutrality and plan to join NATO. The 700-megawatt NordBalt links Sweden and Lithuania. The two ESTlink cables, with a total capacity of 1,000MW, connect Estonia and Finland, which is anticipating rolling blackouts this winter after ending power imports from Russia.

❹ KLAIPEDA LNG
Liquefied natural gas has become a critical piece of the region's response to the Kremlin's cutoffs, and Lithuania's import facility at Klaipeda—just up the coast from the Russian province of Kaliningrad—has been christened "Independence." Germany is hiring as many as seven ships that can transfer the fuel to the gas grid; three are expected to start before yearend, including one in the coastal port of Lubmin, where Nord Stream makes landfall. Fearing an attack, Finland and Estonia have decided to operate their joint floating LNG terminal from a berth in Finland this winter.

❺ EUROPIPE II AND
❻ LANGELED
These pipelines carrying Norwegian gas to Germany and the UK look particularly vulnerable given that much of their path, covering more than 1,000 miles (1,609 kilometers), runs through extremely remote waters. "The worrying thing about what happened with Nord Stream is that it's quite a busy area," says Anne-Sophie Corbeau, a researcher at Columbia University's Center on Global Energy Policy.

❼ BORNHOLM ENERGY ISLAND
Germany and Denmark's €9 billion ($9.3 billion) offshore wind-power hub is still years away from operation, but the site is tough to protect, and an incident there would deal a bitter blow to European efforts to become energy independent. The EU, UK and US in May blamed Moscow for cyberattacks on a satellite network that impaired control of thousands of German wind turbines. "A wind farm doesn't operate by itself," says Patricia Schouker, an energy analyst at the Payne Institute for Public Policy in Colorado. "It's connected, and Russia right now is testing those entry points and vulnerabilities."

DANISH DEFENSE COMMAND/REUTERS. DATA: GLOBAL ENERGY MONITOR, SCIGRID. NORDBALT AND ESTLINK ARE SHOWN AS A DIRECT LINE BETWEEN THEIR TWO PORTS

Sustainability

American EVs, From the Ground Up

Albemarle's idle lithium quarry in North Carolina

A proposal to reopen a lithium mine is a crucial building block for an all-US battery supply chain

In Kings Mountain, North Carolina, there's a tree-filled park that provides urbanites from nearby Charlotte some respite in nature. At its center is a tranquil pond, featuring turtles, fish and other wildlife. The sparkling waters, which plunge some 150 feet deep, are the result of decades of accumulated rainfall in a defunct lithium mine. Albemarle Corp., the world's largest producer of the silvery white metal, is on a quest to restart operations.

The project is a crucial component of a plan by automakers to create the US's first complete supply chain for electric vehicle batteries, to reduce their dependence on China. In EV batteries, there's no substitute for lithium. If the Kings Mountain mine can proceed, Albemarle envisions processing the lithium it produces at a facility the company would open in the US Southeast. And carmakers including General Motors Co. and Ford Motor Co. have committed to investing in new domestic plants to make EV battery cells. "The industry is looking for a localized supply chain," says Albemarle Chief Executive Officer Kent Masters. "We're trying to build the first building blocks for that with lithium."

The leading producers of lithium are Australia, Chile and China, respectively. While the US has the fifth-largest global reserves of the metal, Albemarle's small operation in Silver Peak, Nevada, is the only active lithium mine in the country. There are a few other proposed lithium mines in the US, but those projects are by early-stage companies, and they face environmental hurdles and local opposition. The US also has minimal lithium processing capacity, and the country's EV battery manufacturing facilities rely on imports of materials.

By contrast, China dominates the global supply chain for EV batteries, boasting 79% of the world's lithium-ion battery manufacturing capacity, versus just 5.5% for the US, according to Benchmark Mineral Intelligence, an

LOGAN CYRUS/BLOOMBERG. DATA: BLOOMBERGNEF

Edited by David Rocks and Rebecca Penty

adviser to governments on critical minerals. "Having that dependence on one country, no matter what that country is, makes a lot of governments nervous," says Andy Miller, Benchmark's chief operating officer.

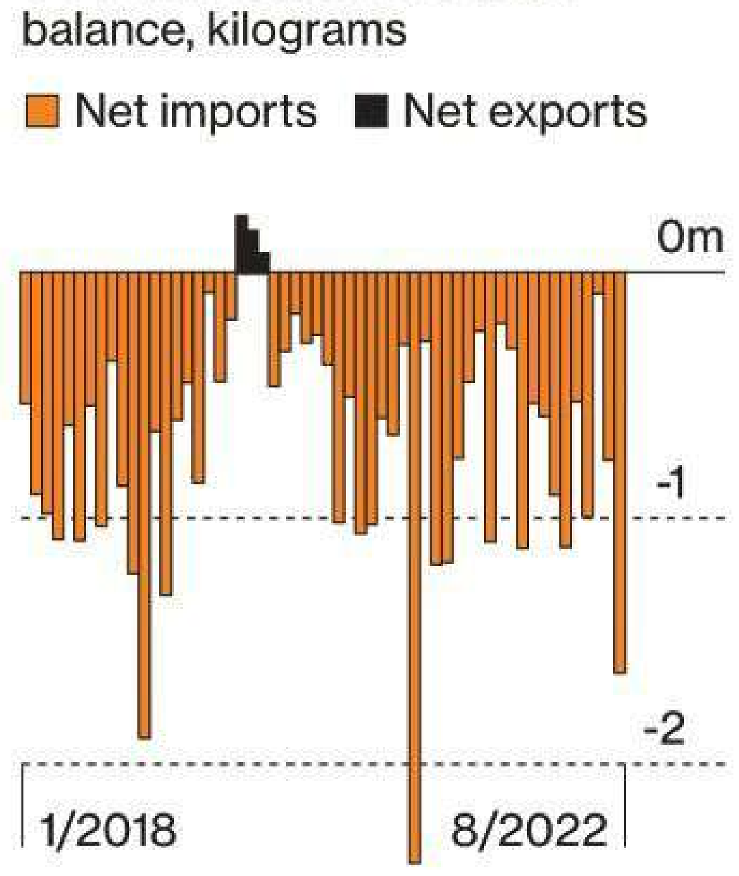
Globally, lithium output has been relatively stagnant because of a 2018-20 market slump that undercut investment in new projects, but prices in China are up more than 100% this year as EV demand surges. In an October earnings call, Tesla Inc. CEO Elon Musk called lithium "crazy expensive," and the company has said that battery supply chain constraints will be the "main limiting factor" to EV market growth. Supplies of lithium need to increase fivefold by the end of the decade as the EV revolution gets into full swing, according to BloombergNEF.

The quarry at Albemarle's Kings Mountain site was a source of lithium used in the Manhattan Project—the US government program that built the first atomic bombs—and has been idle since the 1980s. The company envisions reopening the mine with an initial annual capacity of 50,000 metric tons in 2027, in conjunction with a facility capable of processing 100,000 tons of mined lithium and recycled chemical products such as battery-grade lithium, nickel and cobalt.

The biggest hurdle will likely be receiving the necessary federal, state and county approvals. President Joe Biden recently invoked the 1950 Defense Production Act to encourage domestic output of critical materials needed for the energy transition, but his administration has proved fickle when it comes to granting permits. Ioneer Ltd., a prospective lithium supplier to Ford and Toyota Motor Corp., has been unable to develop a mining project in Nevada because public lands near the site are home to the endangered wildflower Tiehm's buckwheat.

Demand for EVs is likely to get a boost from the Inflation Reduction Act recently passed by Congress, which stipulates that EV purchases can qualify for a $7,500 tax credit, as long as their batteries contain minerals extracted from or processed in a country with a free-trade agreement with the US and some components are made or assembled in the US. General Motors is building four US battery cell plants; Ford has a joint venture with South Korea's SK Innovation to spend $11.4 billion on three battery factories and an EV assembly plant in Tennessee and Kentucky; Volkswagen is looking at setting up an in-house battery cell manufacturing operation in the US; and Panasonic, a longtime battery supplier to Tesla, has chosen Kansas to build a battery factory.

US lithium carbonate trade balance, kilograms



But without a domestic supply of lithium, "the US is at risk of being left behind," says Ram Chandrasekaran, principal analyst of transport and mobility at consultant Wood Mackenzie Ltd. "It's almost basic common sense that the US has to focus on bringing on some of that supply chain locally so it has better control of it." —*Yvonne Yue Li*

THE BOTTOM LINE A domestic supply of lithium is paramount for US automakers looking to reduce their reliance on China for EV batteries. But it'll take years for the biggest lithium miner to produce more in the US.

The Penalty Dodge at US Refineries

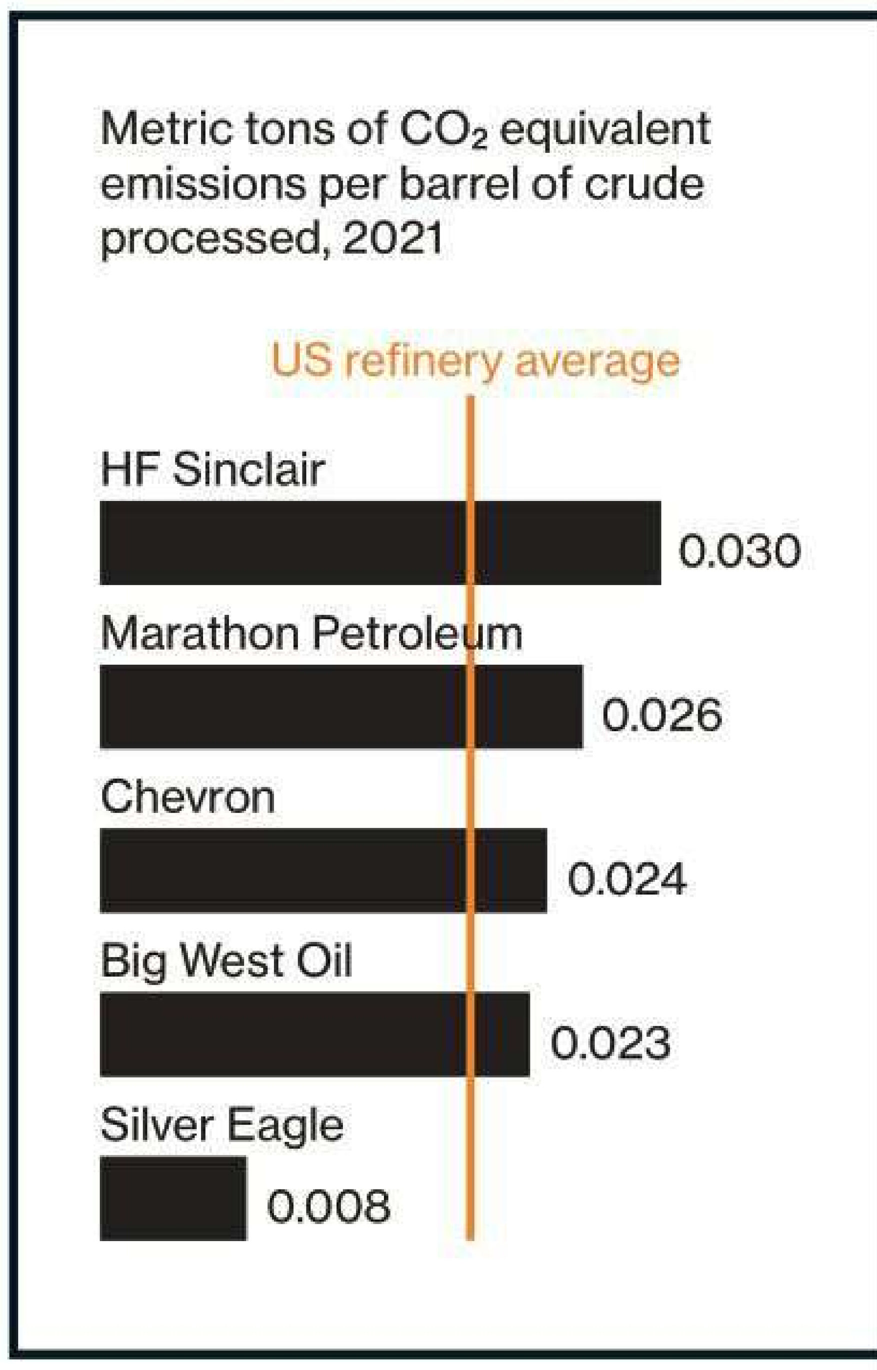
For many processors of crude oil, paying fines is cheaper than cleaning up emissions

Nestled between the snow-capped peaks of the Wasatch Mountains and the briny waters of the Great Salt Lake, I-15 in northern Utah leads to some of the most unspoiled areas in the US. But on the way, visitors must pass a gauntlet of five oil refineries that foul the air with carbon dioxide, nitrogen oxide, benzene and other pollutants. While the facilities rank among the smallest processors of crude oil in the country, they spew out more greenhouse gases per barrel than most larger facilities. And because they're located high in the Rockies, the effect of their emissions is supercharged, making the Salt Lake refineries a hazard to both public health and the climate. "People live very, very close to these," says Joro Walker of Western Resource Advocates, a conservation group. "Everything needs to be done to ensure that the emissions from the refineries are minimized."

The situation shows the loopholes in regulating refineries. They're a major contributor to global warming, but the US Environmental Protection Agency doesn't directly police their greenhouse gas emissions. While the EPA does regulate other hazardous pollutants, the ▶

◀ penalties are often too low to ensure compliance, and in many cases the agency isn't as tough as it could be.

With few pipelines connecting the region to the Gulf and West Coasts, gasoline used in the Mountain West typically must be made locally. EPA data show that 10 of the 13 refineries in Montana, Utah and Wyoming emit more greenhouse gases per barrel than the US average. Cutting their emissions to the national average would be the equivalent of taking more than 800,000 cars off the road. Nationwide, bringing all refineries to that level would have the effect of eliminating an additional 6 million cars.



These emissions are particularly troublesome in areas like Salt Lake, where pollutants can get trapped by the surrounding mountains for weeks, especially in the winter. And the intense high-altitude sunlight interacts with nitrogen oxide and volatile organic compounds from industrial plants to create ozone, which is like "a sunburn of the lungs," says Laura Kate Bender, who works on air quality at the American Lung Association.

Refinery emissions are determined by such factors as the type of crude used, how much is processed and the equipment employed. Upgrading older units and installing gear that uses heat from one unit to power another, or technologies that capture and store carbon, can reduce emissions. But for some refineries, the cost of new equipment eclipses the penalties for violations.

The EPA set a deadline of 2020 for the final piece of a three-step effort to cut sulfur from gasoline. But after completing the first two phases, some plants have been reluctant to make the last upgrades, says George Hoekstra, a veteran of BP Plc and Amoco Oil Co. who works as an industry consultant. Adding sulfur-reducing equipment to a 50,000-barrel-a-day refinery would cost about $125 million, Hoekstra says, while fines for noncompliance come to about $18 million a year. Some refiners "chose not to make those investments," he says.

And sometimes fines are far lower. The agency has deemed Big West Oil's Salt Lake plant in "high priority" violation of the Clean Air Act since at least January 2020, but Big West has been fined just $344,000 during that time. The EPA says it "continues to work with state partners to even the playing field in terms of size of penalty" to ensure compliance with federal rules. Big West didn't respond to requests for comment.

Jeremy Nichols, climate and energy program director at WildEarth Guardians, an environmental advocacy group, says the EPA and state regulators must apply greater pressure to refiners. For the industry, paying fines rather than taking the steps needed to cut emissions has become "business as usual," he says. The penalties "just don't inflict any kind of pain and certainly don't impact their economic bottom line, so there's no incentive for them to do better." —*Ilena Peng*

THE BOTTOM LINE The equipment needed to cut a 50,000-barrel-a-day refinery's sulfur emissions to EPA-mandated levels would cost about $125 million, versus fines of $17 million a year for noncompliance.

Fixing Europe's Leaky Buildings

The EU is lagging in a plan to trim the carbon output of 35 million structures at a cost of €2.75 trillion

On the waterfront of the Greek port of Piraeus, a crane prepares to lift giant aluminum panels onto the shell of a 22-story tower. On an outdoor terrace, workers pour concrete in a gentle slope to steer rainwater into underground tanks. Inside, two men in hard hats plug strips of steel wool into an interior wall as insulation.

The €100 million ($103.5 million) renovation aims to turn the hulking Piraeus Tower, which has dominated the city's skyline since the 1970s, into Greece's greenest building. The facade will be covered with sun-deflecting fins, the thermal windows are made from recycled glass, each basement parking spot has an EV charging point, and sensors will measure the microclimate to help maintain green spaces. "The port was an ugly industrial area, derelict and dead," says Olga Itsiou, chief operating officer of Dimand SA, the tower's developer. "Our renovation will bring life back to the neighborhood."

The project, five miles from central Athens, is one of Europe's highest-profile makeovers, fitting into what the European Union calls the Renovation Wave. The initiative, launched in October 2020, aims to decarbonize 35 million homes, apartment houses, offices, schools, hospitals and more by 2030, at a total cost of €2.75 trillion. Most European buildings are more than two decades old and

FROM TOP: LARANIK/SHUTTERSTOCK; PILA. DATA: ENVIRONMENTAL PROTECTION AGENCY, ENERGY INFORMATION ADMINISTRATION. NUMBERS ASSUME REFINERIES ARE PRODUCING AT FULL CAPACITY are often drafty and inefficient—helping make the sector the region's single largest consumer of energy, accounting for 36% of total emissions.

So far, though, the Renovation Wave looks more like a trickle. Just 1% of Europe's buildings are renovated each year, a rate the EU says must be doubled. And deep renovations—aimed at lowering energy use by at least 60% with improved insulation, modern windows and heat pumps to replace gas boilers—are done on only 0.2% of buildings annually. At that pace, it will be almost impossible for Europe to hit its target of net-zero emissions by 2050. "A sense of urgency has to be injected into this process," says Adrian Joyce, director of Renovate Europe, a group campaigning to speed the transition. "If we don't achieve deep renovation of 2.5% by 2030 and maintain it for two decades, we'll fail in this challenge."

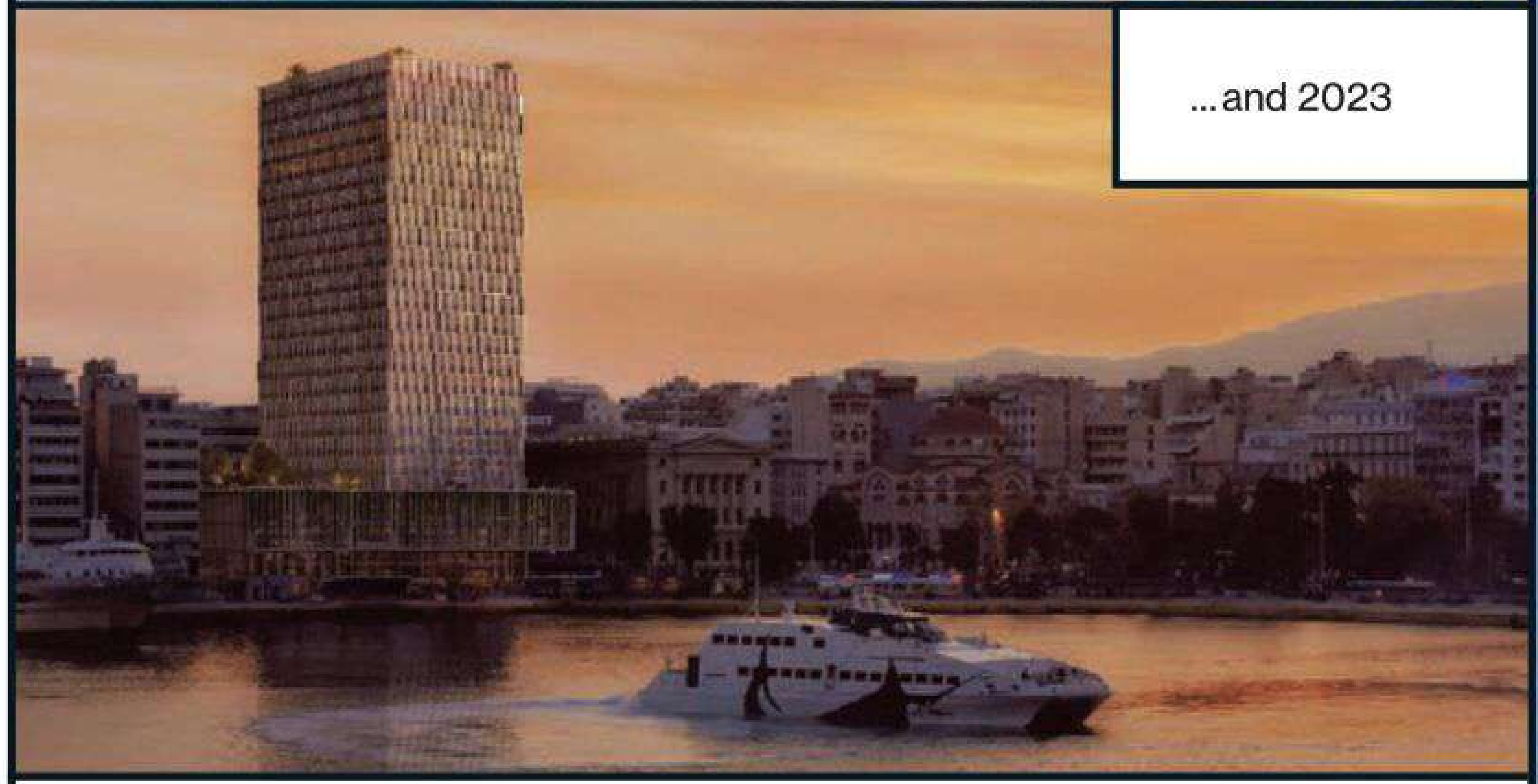
In October, European authorities agreed to tighter rules on energy performance, calling for all new buildings to be zero-emission starting in 2030. For existing structures, EU members aim to achieve zero emissions by 2050. The European Investment Bank, the EU's lending arm, is coupling grants with loans to cover the cost of retrofits. Lithuania has led the way with more than €1 billion in upgrades, and in Greece the bank is providing €375 million to renovate public buildings.

While Europe typically spends about €125 billion annually on makeovers, the European Commission says the Renovation Wave will require €275 billion a year. But the EU has allocated about €7 billion a year (a total of €50 billion) for such projects from 2021 to 2027. "There is indeed a big investment challenge," says Carlos Sanchez Rivero, an energy finance team leader at the commission. He says the €50 billion will help mobilize capital from landlords, real estate developers and homeowners. "The bulk of the money will need to come from the private sector," he says.

In Greece, where renovations ground to a halt during the 2009-18 debt crisis, €4.1 billion of EU pandemic recovery money has been earmarked for greener construction. Alexandra Sdoukou, Greece's secretary general for energy and mineral resources, says the country intends to cut energy use in buildings 38% by 2030, exceeding the EU's 32% target. That will require renovating 60,000 structures—about 15% of the housing stock—every year. The government in June offered subsidies of up to 50% to households swapping out old air conditioners, fridges and freezers for more efficient models and got 1 million applications within a month. "Most of our buildings were built before 1980," Sdoukou says. "If we really want to reduce greenhouse gas emissions, we have to address this."

The Piraeus Tower is the country's most ambitious project. Although the skyscraper was completed in 1972, the only part of it that was ever occupied was retail space on the first few floors, because the area didn't develop as quickly as expected. In 2020, Dimand and its partners

Piraeus Tower, in 2017...



...and 2023

won a contract with the local government to redevelop the tower as part of an effort to revive the Piraeus waterfront, where cargo ships berth and dozens of ferries set sail daily for islands in the Aegean Sea. The project is scheduled for completion in about a year, and Dimand aims to make it the country's first LEED-certified structure—a US rating bestowed only on buildings that are hyperefficient and follow draconian rules for design and construction.

It features 1,576 vertical fins—sheets of metal about 10 feet high jutting out from the facade—that Dimand says will help reduce air-conditioning bills by 20%. The lower floors of the building form a pedestal for the tower that will be covered in greenery and topped by a public garden. Any rain that lands there will be steered into a half-dozen collection tanks in the basement.

In the project's early days, developers encountered problems typical of many renovations. Missing blueprints had to be re-created. Asbestos in the basement had to be removed. And the internal structure needed to be reinforced after the decades of neglect that gave the building its nickname, the Sleeping Giant. George Maltezos of the European Bank for Reconstruction and Development, which has invested €9 million in the project, says the renovation offers a chance to awaken the tower after a half-century of slumber, attracting new shops, restaurants and businesses to the area. "Piraeus has recently become an infrastructure hub," he says. Rebuilding the skyscraper "will have a multiplier effect." —*Gautam Naik*

THE BOTTOM LINE Europe typically spends €125 billion a year on makeovers, but the Renovation Wave will cost €275 billion annually. And public money is lacking: The EU has allocated about €7 billion a year for such projects.

THE LAST

WORKERS PREPARE
EQUIPMENT FOR DRILLING
RIGS OFF GUYANA'S COAST

PETROSTATE

GUYANA IS BETTING ON A PARADOX. THE CARIBBEAN NATION WANTS TO CASH IN ON OIL. IT PROMISES TO USE THOSE BILLIONS TO PREPARE FOR A MORE SUSTAINABLE FUTURE

BY MONTE REEL
PHOTOGRAPHS BY ROSE MARIE CROMWELL

GO TO THE SEAWALL IN GEORGETOWN LATE ON A Sunday afternoon, and you'll find Guyana with its guard down. Everyone's "liming"—a term that washed onto this South American shore decades ago from Trinidad that means hanging out, talking about nothing. To lime isn't to deny the existence of challenges or threats, it's to temporarily deny them the power to darken your state of mind.

Families sit side by side on the waist-high concrete wall, feet dangling, the sea breathing hard behind their backs. Across the shoreline road, vendors under nylon canopies sell fried fish and plantain chips. Just after the sun sinks into the water, the rear doors of minivans swing open, speakers pulsing with reggae and hip-hop. Every now and then, the sea asserts itself, slamming against the wall, spraying a salty mist. Less often, maybe a couple times a year, it sends waves all the way to the road. On very rare occasions—like that unforgettable January back in 2005—tides and rain conspire to swallow the seawall whole, deluge nearby homes and carry off some of the people there.


AT THE SEAWALL IN GEORGETOWN

Theoretically, every one of Guyana's 800,000 or so residents could claim for themselves about 66 acres of real estate inland, safe from the sea. Much of that land is forested, some of it full of rare wonders, like endangered polychromatic tree frogs and waterfalls spilling from green plateaus. In reality, roughly 90% of the population is crammed into the narrow floodplain hugging the Caribbean. Almost half of them live in Georgetown, the waterlogged capital, most of which sprawls across a coastal basin that's about 7 feet below sea level and depends on a network of drainage canals to remain habitable.

They live on the coast because that's where the economic opportunities, such as they are, can be found. Guyana historically has been one of the poorest countries in the Western Hemisphere; from 2000 to 2015 the gross domestic product of the entire country was much smaller than that of most midsize US cities.

Such modest fortunes could be swept away in an instant.

That 2005 tidal surge wiped out 59% of the annual GDP. Putting in adequate countermeasures—expanding and reinforcing the 280-mile long seawall, upgrading drainage canals, building housing infrastructure on higher ground—will cost billions.

Guyana will almost certainly experience another devastating surge. Warming Caribbean waters are projected to rise 8 to 10 inches in the next 30 years, according to the U.S. National Ocean Service. And if the world continues to burn fossil fuels at the going rate, the same report says the sea will rise 6 feet by century's end. If nothing else changes, Georgetown's seawall will be under water, and its residents will have scattered.

In the face of this, Guyana's government is betting on a paradox: The very thing that threatens the country will be its salvation. The country's leaders, praised in the past for their environmental stewardship, now believe the most effective way to rescue Guyana from fossil-fuel-induced climate change is—crazy as it sounds—to fully embrace the business of fossil fuels.

At the bottom of Guyana's share of the Caribbean Sea sits a massive cache of oil. In 2015 exploration crews from Exxon Mobil Corp. found what would prove to be billions of barrels of crude about 120 miles from the shore—a once-in-a-generation jackpot that accounts for about one-third of the total oil discoveries worldwide since then. Some industry analysts estimate that the reserves in Guyanese waters could equal China's.

The collision of these elements—the tangible threat of climate change, the country's extreme economic stress and the sheer enormity of the discovery—has turned this strip of South American coastline into something of a proving ground, the spot on the map where the contemporary tensions shaping the world's energy landscape have most forcefully converged. Other countries have stumbled upon truly transformational oil finds, but none has done so under circumstances quite so stark, at a moment long after the developing nations of the world pledged to wean themselves off of fossil fuels.

"Investing in new fossil fuels is moral and economic madness," United Nations Secretary-General António Guterres declared earlier this year. Maybe so, but for Guyana's leaders to reject a discovery potentially worth hundreds of billions of dollars would be political madness.

They've promised to create a different kind of petrostate: an environmentally sustainable one that uses oil revenue to build a more durable infrastructure powered by renewable energy. Other developing countries with potential oil reserves are watching Guyana: They, too, want to know if drilling could be an acceptable way to pay for entry into a post-oil future.

Since the first oil was drilled three years ago, Guyana's economy has become the fastest-growing in the world. And some of the new petrostate's weaknesses are already being exposed. Its contract with Exxon gives the company unusual advantages: a bigger share of revenue than normal with fewer tax requirements. Even so, Guyana is exploiting as much of its oil as it can, as fast as it can. The oil is quickly flowing, the sea is slowly rising, and the world is watching.

SINCE THE FIRST OIL WAS DRILLED THREE YEARS AGO, GUYANA'S ECONOMY HAS BECOME THE FASTEST-GROWING IN THE WORLD

ON THE MORNING OF MAY 26, GUYANA'S Independence Day, dozens of government-issued cars and trucks left the capital to venture west along the coast. Custom dictated that the president and other officials would celebrate the holiday during a midnight flag-raising ceremony.

They were heading toward Anna Regina, a town on the other side of the Demerara and Essequibo rivers. To cross the Demerara, the vehicles passed over a mile-long pontoon bridge that was meant to last 10 years when it was built 44 years ago. To cross the Essequibo, they boarded a ferry. The distance between Georgetown and Anna Regina, if you draw a straight line across the map, is about 40 miles. But the journey took more than three hours. The highest-ranking government officials flew.

At the ceremony in the town's central square, President Irfaan Ali addressed the crowd with a State of the Union-style litany of triumph. He told them the pontoon bridge would finally be replaced with a permanent one. A four-lane highway was already under construction—one of dozens of road-building projects that will link Guyana's cities to one another and to Brazil and Suriname. More homes than ever were being connected to reliable water and energy services, thanks to a 107% increase in the government's capital budget this year alone. "We are finally on the path to prosperity," Ali said.

Everyone knew the money for all of this was coming from oil. Guyana is producing about 360,000 barrels a day. That figure is expected to reach 580,000 next year, and likely 1 million a day by 2027. Guyana's GDP is projected to jump 58.7% this year, and already oil accounts for more than 60% of the country's exports, supplanting sugar and rice. It will expand the economy fivefold over 10 years.

Guyana's blueprint for managing its growth is called the Low Carbon Development Strategy 2030. It aims to protect natural resources, mitigate climate change with reinforced seawalls and other infrastructural improvements and diversify Guyana's industries. The oil money will fund a new energy grid that will eventually run exclusively on renewable sources. The document is based on a plan first floated during the presidency of Bharrat Jagdeo (1999-2011), who is currently serving as vice president, now updated to account for oil revenue. Term limits prevented Jagdeo from seeking reelection, but today he's widely acknowledged, inside the government and among the public, as the man in charge of the country's oil wealth.

Last year, Ali and Jagdeo pitched the oil-funded blueprint as an enlightened manifesto—a way for Guyana to break free from an oppressive global system that discriminates against developing countries. "Expecting developing economies to leave their oil in the ground really means protecting the monopoly-like situation of existing producers, so that they can maximize their income from oil and gas," Ali said at the time. He called it a matter of economic justice. "No responsible government should volunteer that its people stay poor so that rich countries can have their market protected."

Guyana might be setting a trend. Barbados Prime Minister Mia Mottley, who delivered the opening remarks at this year's COP27 UN climate conference, recently reopened her country's waters for exploration by fossil fuel companies. Her rationale echoed Guyana's: Barbados hopes to use oil money to partly finance a complete shift to renewable fuels by 2030. It's not an ideal solution, she suggested, but the developed nations of the world have given them little choice. Ever since the Kyoto Protocol was drafted in 1997, developed countries have pledged to contribute billions of dollars to poorer countries to help them adapt to climate change, which the industrialized world, primarily, triggered. Very little of that money has materialized.

So Ali, at the podium in Anna Regina, described the country's recent growth as a leap toward true independence, 56 years after Guyana declared itself free from British rule.

About 20 minutes before the flag next to the stage was to be raised, the skies opened. Thousands of spectators scrambled for whatever cover they could find, but Ali and Jagdeo ventured out into the storm. They joined the flag-waving dance troupe that stomped in the puddles in front of a stage. Then, clothes soaked, glasses foggy, they returned to their VIP tent.

Rain fell all over the country that day and night. The next morning, Jagdeo toured a region where flooding had forced dozens of residents into an emergency shelter at a sports complex. "To manage Guyana is to manage water," he said in an interview after he returned to Georgetown. And to do that, he suggested, Guyana was on its own. "If we wait on the world," Jagdeo said, "we will be inundated by the sea."

Guyana's turn toward oil is awash in irony, not least because Jagdeo, as his presidency was ending in 2011, was lauded all over the world as an ecological superstar: the man who'd figured out how protecting the environment and limiting carbon ▶

◀ emissions might supercharge, instead of strangle, financial growth in the developing world. At a gala in Seoul, he accepted a trophy as a "Champion of the Earth" from the UN. Five different universities, from Ontario to Moscow, awarded him honorary doctorates for his work to fight climate change. *Time* magazine printed his name on its cover as one of its "Heroes of the Environment." In New York, the actor Harrison Ford and other environmental activists celebrated Jagdeo's commitment to conservation. All praised him for coming up with a way for rich nations to reward poor ones that resisted the sort of development that drove up carbon emissions.

About 85% of Guyana remains covered in forest, sponging up tons of the carbon dioxide richer countries are emitting. Jagdeo argued Guyana should be compensated for the service. With the support of the UN, in 2009 he negotiated a deal in which Norway agreed to pay Guyana as much as $250 million to leave large swaths of its share of the Amazon rainforest untouched. In return, Norway would receive carbon credits to offset its overall emission totals, allowing it to meet its climate goals. It was the world's first bilateral carbon-trading scheme.

Now, some of the organizations that heaped praise on Jagdeo seem conflicted about Guyana. For example, Conservation International's local chapter last year rejected a $10 million grant to fund preservation and sustainable development initiatives because the money came from Exxon.

Jagdeo and Ali have responded to criticism by amplifying their insistence that Guyana can, in effect, have its cake and eat it too. "There's absolutely no contradiction," Ali said in an interview. "We are not moving away from any of our commitments. As a matter of fact, we are expanding our commitments on the side of the environment." They believe today's oil revenues can ensure that Guyana thrives even after the international demand for oil dries up. They figure they have about 30 years until that happens.

More than anything else, it's this sense of haste—the desire to sign a contract and get the oil flowing with little regulatory interference—that has stoked the chorus of doubters. They're armed with evidence from almost three years of drilling and analysis of a contract they say was flawed from the start. They believe the government's plans have already begun to spin out of control.

IN 2016, AFTER THE DISCOVERY WAS ANNOUNCED, Exxon and Guyana amended the original exploration deal they'd signed in 1999. The new contract, which split the oil revenue 50-50, with a 2% royalty paid to the government, struck industry analysts as an unusually sweet deal for Exxon. "It's the most favorable I think I've ever seen in the industry, anywhere," says Tom Mitro, a senior fellow at Columbia University's Center on Sustainable Investment. As a financial officer at Chevron for three decades, Mitro crafted deals with governments in several developing nations. After that, he jumped to the other side of the table, consulting on behalf of developing countries, including Angola, in their dealings with fossil fuel companies.

Exxon defends the contract, saying that it took on significant risks by gambling on a country with no history of oil production and very little energy infrastructure. "The terms of our petroleum agreement with the government of Guyana are common in the industry and competitive with other countries at a similar stage of resource discovery," a spokesperson for Exxon says.

But the terms with Guyana were drawn up after the discovery had been publicized as being unusually large. "Exxon makes the argument that they didn't really know how much resource was there," Mitro says. "Well, they did."

A roughly even split isn't unheard of for a high-risk operation with a shaky promise of payoff. When the probability of success is greater, the government generally gets a significantly larger share, often through increased royalties. According to Rystad Energy AS, an Oslo-based consultant, the global average for a government's take in offshore projects is 75%.

> EXXON'S CONTRACT, WHICH SPLIT THE OIL REVENUE 50-50, WITH A 2% ROYALTY PAID TO GUYANA, STRUCK INDUSTRY ANALYSTS AS AN UNUSUALLY SWEET DEAL

Beyond the basic percentage splits, Mitro says even more surprising concessions are buried deeper in the contract. For example, the contract stipulates that any income taxes imposed on Exxon and its partners be paid for by the government. However, Guyana passes the companies a receipt for those taxes, which Exxon can use to earn a foreign tax credit in the U.S. Exxon says this is common practice. Mitro says that was once true, but now describes the practice as "highly unusual and beneficial to the companies." An Exxon spokesperson notes that the company has spent $700 million with Guyanese businesses since 2015 and that half of its full-time employees in the country are Guyanese.

There are additional benefits to Exxon in the contract. The company is allowed to use current oil revenue to repay itself for future expenses for decommissioning and abandoning its wells. The company likely won't incur those costs for decades. "I've never seen that, anywhere," Mitro says.

The sheer geographic size of Exxon's lease—26,806 square kilometers (10,350 square miles)—also matters. It's about nine times larger than Exxon's average international offshore lease, Mitro has calculated, and roughly 100 times larger than the average lease in the Gulf of Mexico. The Guyana contract includes an unusual provision allowing the company to immediately recover costs for additional exploratory work anywhere within that area. Exxon effectively pays itself back for those costs out of the oil that otherwise would go to the government. Most production-sharing agreements covering large areas allow such deductions only within small, specified areas, Mitro said, not everywhere under lease.

More than a year before drilling began, an adviser to then-President David Granger, Ali's predecessor, raised warnings in public about many of these contractual concerns. The adviser's own contract expired the next month and wasn't renewed.

Today, Ali and Jagdeo acknowledge the contract does Guyana few favors. "The agreement could have been better," Ali says, "but that's water under the bridge." They dismiss the idea of renegotiating and are instead focusing on crafting better future deals. In November, when the government announced plans to auction the leases to additional offshore exploration territories, Jagdeo promised that these contracts will correct some of the imbalances in the Exxon deal. Guyana will seek a royalty rate of 10% and will also impose a 10% corporate tax rate.

THE MAN TASKED WITH MAKING SURE THAT Exxon's drilling operations would meet the country's environmental standards was Vincent Adams, who'd spent his career monitoring the energy sector in the US. Adams was born in Guyana but worked for the US Department of Energy for 30 years. By the time he retired in 2016, he'd spent a decade with the Senior Executive Service, a DOE leadership team of the highest-ranking civilian professionals. "I thought I was done," he says of his decision to retire. But after Exxon's discovery, Guyana desperately needed seasoned advisers. "There just wasn't anyone in Guyana with experience in that field," Adams recalls. In 2018 he accepted the position of director of Guyana's Environmental Protection Agency.

Both Exxon and Guyana's government promised that the drilling operation itself would have an unusually small impact on the environment. When crude oil is drilled, the process produces waste in the form of natural gas, which is often disposed of by burning it off, or "flaring" it. Worldwide, gas flaring sends more than 400 million tons of CO_2 into the atmosphere each year. But the oil company assured the government that gas wouldn't be flared at its rigs and would instead be reinjected into the ground. Guyana codified the promise, outlawing flaring in all phases of production—except during a rig's initial startup, when minor, temporary flaring is practically unavoidable.

That promise has been broken, repeatedly. After the startup period, Exxon's subsidiaries flared thousands of tons of gas, and they continued to do so throughout most of the first three years of production. The company blamed equipment failure—a faulty compressor that proved difficult to replace, it said. Exxon says that now, after the compressor has been fixed, its "Guyana operations are among the best performing in the world with regards to emissions intensity."

Adams, tasked with holding the oil companies accountable, says he felt overwhelmed. "There was still nobody within the EPA with any training whatsoever—I mean zero training, not a single course in petroleum engineering—besides myself," he says. That essentially left the oil companies in Guyana to regulate themselves, he says, and they took advantage of the situation by violating the no flaring policy on a daily basis. In the first 15 months of drilling, that flaring emitted about 770,000 metric tons of greenhouse gas emissions—more than the estimated annual emissions from all the passenger cars in Guyana.

Adams believed the government, including the administration of Ali and Jagdeo, which took over less than a year into the drilling, had surrendered far too much authority to Exxon and its partners. He argued that production levels should be drastically cut to reduce the flaring, a measure that he says Exxon fiercely resisted as it continued to blame the emissions on faulty equipment. "We know that they're doing their best to try to fix it," Adams told a reporter from Reuters in August 2020, "but the bottom line is it's not fixed."

Later that month, he was placed on administrative leave, and soon after that his contract was terminated outright. Adams says he lost his job for trying to hold Exxon accountable. The government didn't comment directly on the dismissal of Adams, a member of an opposition political party, but suggested that such criticisms are politically motivated.

REINFORCING A PORTION OF THE SEAWALL

Shortly after Adams was fired, Guyana announced that instead of requiring Exxon to cut production to manage the flaring, it would fine the company $45 for each ton of carbon emitted. Ali has touted the measure as "one of the very few taxes on flaring in the world," and he describes that levy, along with new restrictions on flaring, as an important environmental safeguard.

"It's absolute nonsense," Adams says from his home in Kentucky. According to his calculations, the fines allow the company to collect 30 times more revenue than it would if it ▶

◀ reduced the flaring through production cuts. “Penalties are supposed to be a deterrent, but in this case, they’re an incentive,” Adams says.

Guyana hopes to capture the natural gas, which to date has been considered a waste product of the drilling process, and exploit it as a valuable resource. It plans to build a 120-mile pipeline to transport the gas to the shore, where it will be processed and used to power the energy grid.

In the meantime, a pending lawsuit brought by three individuals in Guyana argues that the flaring and other environmental violations have threatened the well-being of the country’s citizens. “My position is that you must comply with the laws of Guyana,” says Melinda Janki, the plaintiff’s lawyer. “If that means that the oil and the gas have to stay in the ground, that’s where they have to stay.”

WHEN THE EXXON CONTRACT WAS FINALIZED IN 2016, Guyana received a signing bonus of $18 million from the company, standard practice in the industry. But the government didn’t publicly acknowledge receiving those funds until it was leaked to the media, more than a year and a half later. Guyana’s constitution required such funds be deposited in an account administered by the Parliament. Instead, the bonus ended up in a government account that wasn’t subject to its oversight.

The former administration insisted it was all an innocent misunderstanding and said its internal auditing suggested that none of the funds had been improperly spent. The controversy eventually faded from front pages. But the secrecy surrounding the bonus reinforced a widely held belief in Guyana: The politicians tasked with managing the oil revenue can’t be trusted.

Graft in the public sector is simply assumed among much of the Guyanese public. In a 2022 national survey by the nonpartisan International Republican Institute, 57% of respondents said they believe the country’s natural resources sector, specifically, is plagued by “a lot” of corruption: 16% said they believe there is “some.” The fear is that Guyana will fall to the “resource curse”—a small group of well-connected elites will get extremely rich, while the rest of the population sees few benefits.

The mistrust is understandable, given that Guyana is, in fact, run by a small group of well-connected elites. The country’s demographics make that practically unavoidable. About 40% of its 800,000 citizens are mired in poverty, living on less than $5.50 a day. The average adult has had six years of schooling, and of those able to earn a college degree, an estimated 89% leave the country to work—the highest rate of brain drain in the world, according to the World Bank. Among the remaining workforce, only 2.3% have a bachelor’s degree, according to a 2018 study. The result is an extraordinarily tiny professional and political elite where the lines between familial and business relationships routinely blur.

The current administration established a sovereign wealth fund requiring all oil revenue to be publicly disclosed and placed into accounts that can be monitored by citizens; violations of the transparency requirements by officials come

NEW BUILDINGS ARE SPROUTING UP ALL OVER THE CAPITAL CITY

with a 10-year jail term. The government also became a member of the Extractive Industries Transparency Initiative, which requires member countries to publicly disclose information about how resource rights are awarded, track finances through public channels and report how those funds benefit the public.

Jagdeo has faced allegations of corruption since his first presidential term. Even as he was negotiating his carbon-trading deal, US officials warned in State Department cables that the international community should be wary of his tolerance for corruption in Guyana. Jagdeo denies any corruption.

Years later, after an opposing political party assumed the presidency in 2017, Jagdeo and other members of his cabinet were accused of fraudulently acquiring properties in a seaside housing development at prices far below market value. He was detained and questioned. After the 2020 elections, Ali and Jagdeo’s government dissolved the investigative unit conducting the inquiry into the housing deals. And late last year their attorney general announced his office was launching an investigation into the Granger administration’s handling of that $18 million signing bonus with Exxon. Before he left office, Granger himself was quoted at a press conference saying, “I don’t think there is any graft or corruption, or intention to misuse the money.”

AT A 2018 RECEPTION IN GEORGETOWN, THEN-US Ambassador Perry Holloway told the crowd that the oil in Guyana’s waters would completely transform the lives of everyone in the country. “You will be the richest country in the hemisphere,” he said, “potentially the richest country in the world.”

Four years later, Guyana doesn’t look anything like the richest country in the world. But it’s undeniably changing. You can see it in the steel rebar sticking out like whiskers from one of the international hotel projects rising near the waterfront in the capital. In the streets jammed with cargo trucks. And at the Ministry of Housing and Water, where people begin to line up in the early hours of the morning, hoping to receive a permit that will allow them to build a new house for their family.

Many of the applicants have been waiting years, if not decades, for a permit. The infrastructure necessary to serve new buildings—electricity access, irrigation canals, roads, sewage—historically has been very hard to secure in Guyana. As recently as 2019 the waiting list for the permits was 70,000 names long. But the government has doubled the department's budget, and Housing Minister Collin Croal says his office plans to issue at least 50,000 permits in the next five years.

Overall, this year's federal budget is 45% bigger than last year's, and much of it is being funneled toward capital projects. Workers are laying the groundwork for numerous housing developments on the edges of Georgetown, grading fields, excavating drainage ditches, steamrolling roads. Some of the developments are suburban-style subdivisions full of modest starter homes; others accommodate stately villas in gated communities. "All of these are virgin lands—lands that were previously rice fields, sugarcane, etc.," says Croal. "There's no infrastructure. So we're starting from zero."

Cummings Lodge is a development being built on the site of a former squatter's settlement. The houses, in various states of completion, stand high on concrete stilts and are designed for lower-income, first-time homeowners. Outside one of them, a taxi driver named Robin Dabyram smooths some mortar on the house he plans to move into with his wife and four children. He's still paying rent on the home he'd hoped to move out of eight months before, but finishing the new place is taking longer than he expected. "We thought everything would be cheaper—labor, materials—and we'd pay less tax, and less for fuel," he says. "It's quite the opposite. Everything's gone sky-high."

Inflation in Guyana is comparable to that in most other countries. But Dabyram says he believes his government has the responsibility to provide more relief to struggling Guyanese: "Somehow, some way, they need to give some money."

Many of the officials in charge of budgetary decisions recognize they're in a bit of a public-relations bind. They remind constituents that rapidly growing economies can overheat—with massive leaps in spending, inflation skyrockets and revenue gains evaporate.

If there's pressure on the government to exploit as much oil and gas as possible quickly, it's not entirely—and probably not even mostly—coming from the idea that the window on the industry is closing. A lot of it is coming from the bottom up, from a population that is ready for their lives to get a bit easier. The immediate funding for housing developments is an attempt to address that desire, while many of the country's more ambitious long-term priorities—the infrastructure reinforcements to address climate change and the plants that will move Guyana toward a renewable energy future, for example—remain in the planning stages.

In an emerging subdivision called, for the moment, "Young Professional Scheme 2," gravel streets lead to two- and three-bedroom houses of gray cement. Water flows in the canals in front of each residence. Cows meander through the bare dirt yards. Mitra Ramukar is raking the sand outside a home his brother bought after 15 years on a waiting list for a permit. They hope to convert the house into a rental property. "You have a lot of foreigners that will be coming to work, and all these people will need houses and apartments to stay in," Ramukar says. Ever since oil was discovered, he's been waiting patiently to witness the effects—any effect—on the country. Only this year, he says, has he noticed a change. "I mean, just within the past two months, the city is jammed with vehicles. It's buzzing."

But those aren't the sort of changes—"chicken feed," he calls them—that he's anticipating. Ramukar works for a domestic airline and a few years ago attended a travel industry conference in Dubai and Abu Dhabi. He marveled at the skyscrapers, outdoor ice-skating rinks, the gardens blooming in the desert. "We need to feel and live like an Emirati," Ramukar says. "That is how Guyanese need to be treated."

People want reinforced seawalls and new hydroelectric plants, but these aren't the priorities for voters who determine the fates of government officials here. To be a new, different and more responsible sort of oil producer might be a noble goal—few disagree. But to follow the heavy carbon footprints of all the other petrostates may be even more tempting. For many Guyanese, the fastest-growing economy in the world isn't growing fast enough. "We're creeping," Ramukar says, "and we need to get up and run." Ⓑ —*With Kevin Crowley*

HOUSES GOING UP ON THE EAST BANK OF THE DEMERARA RIVER

‘Oh,

Apple Stores defined a generation of retail with their hangout vib
By Josh Eidelson Photo

An Apple Store
in Chicago

I’m Working Retail’

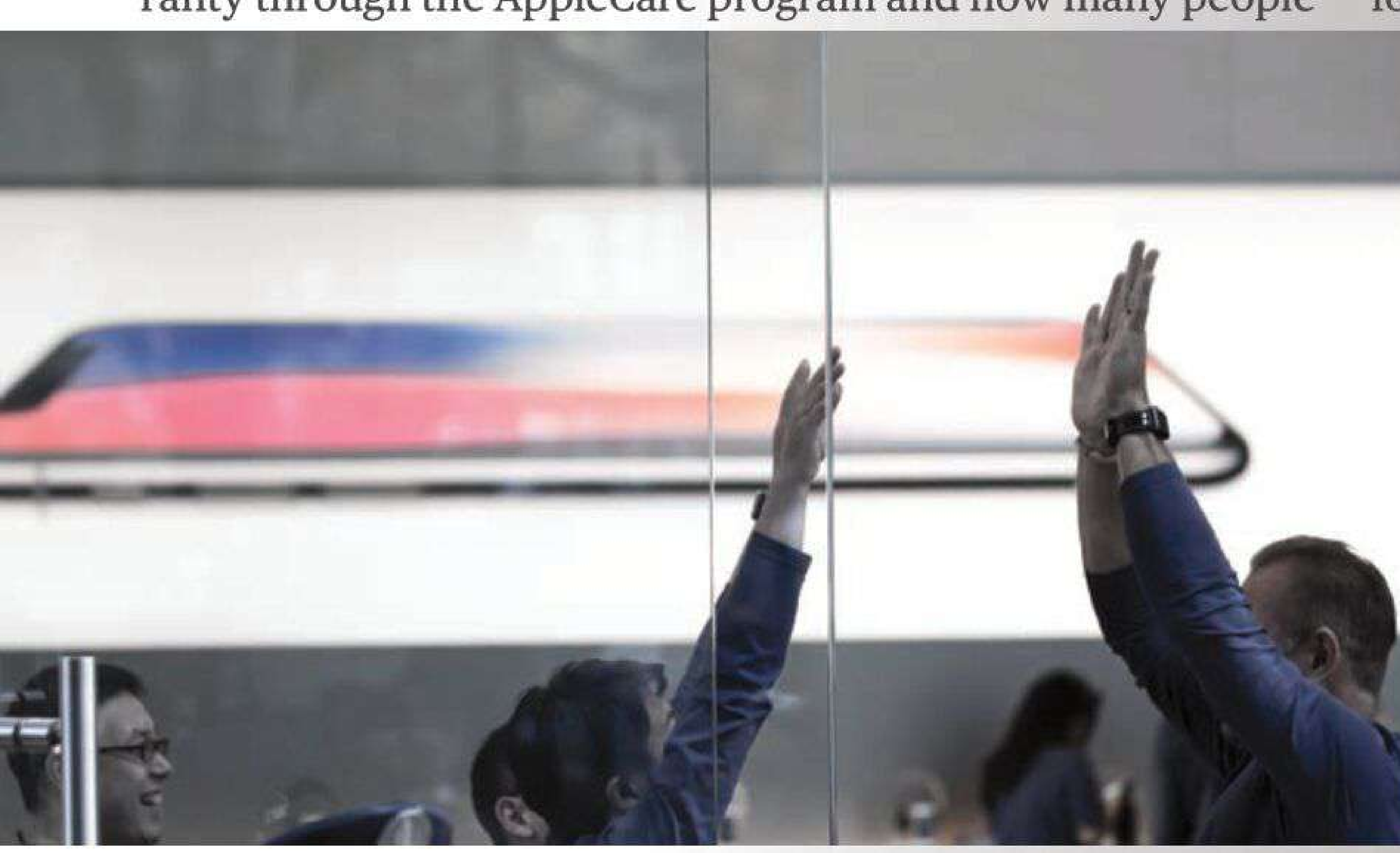
…es and earnest geekery. Quietly, gradually, things have changed
…ographs by Evan Jenkins

The Apple Store where you'll do some holiday shopping this year looks the same as always. White-oak tables in neat rows welcome you beneath a gleaming Apple logo, the same one you'd see at the store along the Champs-Elysées or in the shadow of the Burj Khalifa. There's enough white light and open space to make you think you're walking through a literal Consumer Heaven.

And, of course, there's the Genius Bar, a help center that for the past two decades has felt like something of a personal concierge service fueled by a small army of friendly, helpful nerds. Genius Bar staffers have generally been trusted to solve your problems, to fix your phone if they could, to replace certain busted headphones for free. In at least one case, captured this spring in a viral TikTok, a dedicated employee taught a coding class to an audience of zero, hoping someone would show up to learn. To this day, strangers flag down off-duty Geniuses for help wherever they see Apple's signature blue T-shirt.

Behind the scenes, though, things have changed, as interviews with dozens of Apple Store employees across nine cities make clear. Apple Inc.'s retail jobs have started to feel a lot more like, well, retail jobs.

Workers say that whereas the focus of an Apple Genius used to be to impress customers with a high level of service, they and other employees are now increasingly pressured to upsell. They're pushed to prioritize "ownership opportunities," the company's euphemism for persuading people to buy new gadgets instead of repairing their old ones. They're also evaluated based on how many customers pay for an extended warranty through the AppleCare program and how many people



The nerding out is a big part of what's for sale

TOMOHIRO OHSUMI/GETTY IMAGES

they deal with per hour. Some stores email workers' stats to colleagues or post them on the wall in employee-only areas, with those of lower sellers highlighted in red.

At a store in Towson, Maryland, for example, management put up a giant laminated photo of a tree in the break room and told Genius Bar workers to add a stick-on label every time they made a sale. The labels included the customer's name and the device's serial number, so managers could verify them. "The tree pushed people to want to upsell," says staffer Tyra Reeder. "You have to focus on your numbers being perfect." While Apple has always used data to assess performance, employees say, which metrics it cares most about and the tactics it uses to boost them have changed dramatically. Kevin Gallagher, who's spent seven years at the Towson store, says he's seen the shift happen. "When I started with the company, it felt like the only number that they worried about was your customer service score," he says, referring to survey results about consumers' satisfaction. Today, "they're looking to milk every last cent out of every square foot."

Apple Store workers say the jobs were plum by retail standards until this transition, and for many they were dream jobs: getting paid to use their geekery for good. The money was decent (it's now $22 an hour in the US, minimum), the benefits were strong (health insurance, pet-sitting help), and some of the perks matched the ones enjoyed by their white-collar counterparts (discounts on Apple products, occasional trips to the corporate headquarters in Cupertino). Also, Apple seemed to have a knack for hiring store managers who were relatively nice, even a little like Ted Lasso. Now, employees say, the sales pressure, exacerbated by understaffing, has made the jobs feel less *Ted Lasso* and more *Severance*. Increasingly, workers have concluded that the only way to regain the Apple experience they signed up for, and hold the company to the values it preaches, is to unionize. After the Towson store did so a few months ago, management stopped using the sales tree.

Apple is the world's most valuable company, at $2.4 trillion, and got that way in large part by maintaining extreme control over its supply chain, from the App Store to the price it pays for glue. Now it's struggling to keep its grip on its workforce. Nowhere is that clearer than at its 272 US retail stores. It isn't just Towson: Workers at dozens of locations are discussing unionization, employees say. So far, only one other store has organized, in Oklahoma City, but its employees' complaints are consistent with those elsewhere. They want more money, more co-workers and less sales pressure. "Unionizing, it really is doing exactly what I was taught at Apple, which was to push the status quo, to not expect just the bare minimum," says Leigha Briscoe, a six-year employee in Oklahoma City.

"We remain committed, as always, to delivering the excellent Apple experience—for our customers, our team members, and the communities we serve," the company said in a statement responding to a detailed inquiry about workers' concerns. "Our retail and online teams connect with customers to help them get the most out of their products and ensure they receive an unparalleled level of support." A spokesperson noted that the company doesn't pay retail workers on commission and said it doesn't require them to meet sales quotas.

Apple also said, "We're proud to offer our teams exceptional benefits and strong compensation, including new family support and education programs." The company didn't directly address the union campaign.

Apple has, however, made its position clear to staff,

“As a technician, my heart is to fix your s---. That’s what I want to do”

including during (allegedly mandatory) meetings and in a video that retail chief Deirdre O’Brien sent to employees this spring. O’Brien told the workers that a union wouldn’t be as committed to their well-being or as quick to solve problems as Apple corporate. “I worry about what it would mean to put another organization in the middle of our relationship,” she said. Per usual for Apple, each copy of her video had the recipient’s employee number scrolling across it, meaning that if someone chose to leak the video, publishing it would expose them.

No peer has anything quite like Apple Stores. They quickly overtook Tiffany & Co. stores in terms of revenue per square foot. Just as important, the Apple Store is supposed to be a vibe. Its retro-futuristic je ne sais quoi, a key element of Apple’s cultural cachet, lands somewhere between a midcentury lounge for the jet set and a *Star Trek* vision of a world without crass commercial impulses. (Gene Roddenberry’s future abolished money.) It’s a shop, but also a place where you hang out between appointments, grazing the internet or trying on different headphones for fun. “It’s also part temple, to go worship at the altar of the brand,” says retail consultant Paco Underhill.

The company gets much of its sheen from a sense that it doesn’t just hawk products, it offers a lifestyle. That image has largely held even as more than a few rivals have released good-to-great phones for less money. The recent shift comes with serious downsides, says retail pioneer Joe Pine, who co-wrote the much-cited 1999 book *The Experience Economy*. “The mistake that so many companies make, as I think Apple has started to do, is they commoditize themselves,” he says.

Pushing staff to work faster and upsell more is “exactly the wrong thing to do,” says Pine. “Short term it can help your sales, but customers are going to get what’s going on.”

One of the wrongest *Businessweek* headlines of all time was published in 2001: “Sorry, Steve: Here’s Why Apple Stores Won’t Work.” Back then, Macs made up only 2.8% of the US market. Our reporter argued that Jobs would be better off selling cheaper stuff, Velveeta rather than beluga caviar. (It was a different time.) But the stores proved exemplars of what’s known as experiential retail, in which companies like Sephora USA Inc. and Nike Inc. try to build brand loyalty by making retail outlets into destinations where people feel encouraged to linger. Today, Apple has about 13% of the US market for personal computers, according to researcher Gartner Inc. More important, it sells 55% of Americans their smartphones.

From the beginning, the stores played an incalculable role in building Apple’s allure. In the era of iMacs and iPods, it distinguished itself by framing its stores as casual hangs. “We would talk about how awesome our jobs were, because all we all had to do today was go and talk about the power of the Mac,” says 15-year employee Graham DeYoung, a bargaining committee member for the new union in Towson, part of the International Association of Machinists, or IAM. “The training that we had was to talk about ‘the why’ instead of ‘the how.’ … You would have an hour-and-a-half or two-hour conversation with someone. You’d test cameras.”

Employees say things began to change after Tim Cook took over the company in 2011, and that the shift has intensified since he put O’Brien, who’d been running HR, in charge of the retail division in 2019. In morning meetings, managers started prioritizing the conversion of repairs into sales, spending more time shadowing employees on the floor and chiding them for failing to upsell. New gimmicks appeared, including Towson’s tree and, in Oklahoma City, a bingo game with candy as a reward for selling accessories such as the Apple Pencil stylus. High performers got shout outs in meetings; low performers got called out on spreadsheets.

Fanboys made up an outsize share of Apple’s early retail staff. Now there’s less exploring and educating, more cajoling and coercion—and less time to take a breath. “It kind of killed my spirit a little bit,” says DeYoung, who once called off from work so he could drive from Los Angeles to Cupertino in hopes of spotting Jobs in the parking lot. “As a technician, my heart is to fix your s---. That’s what I want to do,” he says. “But what I’m encouraged to do is to say, ‘Well, this is what your phone is worth for a trade-in.’”

O’Brien didn’t provide comment for this story, but in a fall 2021 speech to students at Michigan State University, her alma mater, she said of Apple: “We feel like we’re not only focusing on doing fantastic work for our customers, but we really are working to make the world a better place.” She also told students her motto was: “There’s no growth in the comfort zone.”

Employees say the sales pressure has been exacerbated by the heightened focus on increasingly onerous quotas for customers handled per hour and by having too few people scheduled to work a given shift. And these days, of course, very few customers are chill when their phone is on the fritz.

For investors, Apple’s approach seems to be working. Last month, the company announced record fourth-quarter revenue of $90 billion, including $71 billion of product sales, up from $52 billion for the same period three years earlier. It’s tough to know how much of that is attributable to Apple Stores, though, because the company didn’t separate out their sales from those of other sellers or online channels.

Workers say the jobs have become utterly draining, and that compensation hasn’t kept pace. The $22 hourly minimum, raised from $20 after a couple stores announced union drives, beats the $15 floor at Starbucks Corp. but represents about three-fifths of what it takes for an adult with one child in Towson’s metro area to support a household, according to the Massachusetts Institute of Technology’s Living Wage Calculator. (An Apple spokesperson noted that the company provides benefits including mental health support, fertility assistance, LGBTQ+ wellness programs, telehealth and virtual care tailored specifically for Black and Latino staff.)

Apple Store culture, which emphasizes honest feedback and perpetual improvement, has changed along with the incentives. Employees say they’ve been told that they seemed angry after having a panic attack at work and that they should direct concerns about understaffing to co-workers who called out sick. Seven-year employee Anthony Viola, who recently ▶

“I feel like a car salesman sometimes, trying to push something I truly do not believe is the right solution”

◀ left the company after his union drive stalled out, says he was repeatedly questioned about his commitment after missing a chance to upsell. Viola says that when the *Financial Times* published an article about workers allegedly retaliated against for dissent, a New York City store manager gathered staff for a meeting where she had them stretch their hands high in the air, then higher, to illustrate the “reserves” they should each tap to power through controversy and keep serving customers.

Around the time retail employees were growing disillusioned, cracks in Apple’s control over its workforce were emerging elsewhere. While the company has been dogged by scrutiny over more dire conditions in its international supply chain—workers for its supplier Foxconn in China began walking off the job at the end of October—high-profile labor unrest in the US is a more recent development.

Shortly before the pandemic, Apple’s US contract workers, including people working on the Maps app in California, began speaking out about sparse sick days, arbitrary firings and prohibitions on talking directly to Apple employees or even using the same bathrooms. In the years since, Slack has helped bring formerly siloed software engineers and product managers together. Many have used the app to share experiences and circulate petitions demanding action on issues like sexual harassment, safety concerns, return-to-office pressure and the hiring of the author of a book that called women “weak.”

Several of those activists allege that Apple forced them out and have filed complaints of illegal retaliation that are pending with the National Labor Relations Board. Some also took road trips to visit the company’s retail stores, where they handed out cards with the slogan “Think Equitable” and QR codes that lead workers to union organizers’ contact info and a national chatroom on Discord.

While activism continues among the software workers, many have left in search of better treatment, says Cher Scarlett, a software engineer who helped create the AppleTogether website and Discord server. “On the retail side,” she says, “they’ve been experiencing these kinds of issues for a long time, and they want them to be addressed, and they want to stay.”

A couple years ago in Towson, a bunch of workers decided to test the boundaries of Apple’s regular requests for feedback by all proposing the same reform: Given how draining their jobs were, they wanted four-day work schedules without pay cuts, the equivalent of a 25% hourly raise. They say the response was a familiar promise that the idea was being “bubbled up” to management, after which it was never mentioned again. “It’s like writing a letter to Santa,” says three-year employee Eric Brown. “Pretty much just like an empty slot that leads to a fire pit.”

“Then we were like, ‘What can we do now?’ ” says 12-year employee William Jarboe. Shifting Covid-19 protocols frustrated workers who felt they weren’t adequately involved in decisions about their own safety. When they raised concerns or asked for hazard pay, managers scoffed or said they were lucky they didn’t get laid off. (An Apple spokesperson said the company continued to provide hourly employees pay and benefits even when the stores were closed because of the pandemic and expanded the leave it offers.) So employees started talking to an IAM organizer and over months secretly built support among colleagues. In May, once they’d signed up 65% of the store, they petitioned the NLRB for an election.

Things got ugly, Towson employees say. Managers, including many flown in from out of town, held mandatory anti-union meetings, suggesting that contract talks would cost workers pay and benefits. Managers also cited the union’s history of being racist in the 19th century as evidence that it couldn’t be trusted. In one meeting, a Black manager touched her skin and told employees, “They don’t care about us.”

Gallagher, the seven-year Towson employee, says he heard from colleagues that managers making anti-union arguments were privately bad-mouthing him as someone “nobody respects.” When he complained to a manager, they referred him to HR, which took no action. “They told me that everybody is allowed to have their opinion about this,” he says. A few weeks later, his side won the unionization election, 65 to 33.

Workers say Apple’s anti-union tactics have gotten more traction elsewhere. In Atlanta, at the first store that called for an election this spring, the Communications Workers of America withdrew its petition the week before the vote, citing the company’s conduct. Managers compared the union to thugs, according to Derrick Bowles, a Genius who now advises pro-union Apple retail workers across the country on what to expect. One talking point he heard from a manager during a discussion about unionizing: “If I have a problem with my wife, I don’t go talk to my mistress.”

The NLRB is investigating union-busting claims that the CWA filed against Apple in Atlanta and Oklahoma. In October the labor board’s general counsel issued a complaint accusing Apple of illegally coercing workers not to organize at a store in New York. (The company has denied wrongdoing.)

Pro-union Apple workers across the US say some of their colleagues have also condemned standard organizing tactics as inappropriate or divisive, such as privately rating co-workers’ likelihood to support organizing, concealing the campaign from people who seem likely to oppose it and wearing pro-union armbands to work.

And yet the unions are gaining ground. Organizers of public campaigns are advising those who are keeping quiet while they build support on trail hikes and at sporting events. They say they’re making headway in large part because Apple hasn’t been living up to its stated values. “I feel like a car salesman sometimes, trying to push something that I truly do not believe is the right solution for this customer,” says Patrick Hart, an organizer who works at the Oklahoma City store. “It has unfortunately now become a game of how hard can you push."

By the time Hart's store filed for a union election, he and other leaders were confident they'd win. The organizing committee of more than 20 employees had already talked to enough co-workers that two-thirds of the store signed CWA union cards within five days. Michael Forsythe, another organizer there, says they'd prepared colleagues for the company's usual arguments against unions and the barrage of one-on-one anti-union meetings with managers. Before Apple started telling employees that unionizing could mean giving up benefits they already had, he'd already asked his co-workers to consider this: If the union really wouldn't be able to wring more money out of management, why was the company willing to burn cash bringing in so many out-of-town managers to help defeat it?

Towson store employees after voting to unionize

BARBARA HADDOCK TAYLOR/GETTY IMAGES

On a Sunday night in October a few days before the Oklahoma City election, Apple held an all-staff meeting during which managers lined up to talk about why they loved the company. Then a regional boss started chiding the workers, asking whether, if he could read their private Discord chats, they'd be proud of what he'd see there. Then he noted that the union activists had said frequently, in response to concerns about losing benefits as a result of unionizing, that they would never "agree to less" in contract talks than what they already had. "But you've already agreed to less," he retorted. "You've lost the culture in this store." He didn't take questions.

"I felt like I was 12 again, and I got caught eating dessert out of the fridge by my stepdad," Forsythe says. Around the same time, Apple told employees it was rolling out a suite of new benefits for all its US stores—except for Towson, because it had unionized and would need to negotiate first. The Oklahoma City workers still voted in favor of the union, 56 to 32. Pro-union workers traded hugs and decamped to a bar, where they fantasized about helping to organize the stores run by all the out-of-town managers who'd campaigned against them.

Apple workers might not have organized in time to fully benefit from the tight labor market and federal friendliness that boosted similar efforts at places like Starbucks. But the new sense of possibility among many employees won't be easily unwound. That's particularly true for some of Apple's youngest staffers, who now see organizing less as a question of "why?" than one of "why not?"

A few years ago, the company seemed less ripe for employee organizing than the likes of Google, where thousands of tech workers walked off the job over its handling of harassment. But Apple had an important vulnerability: heavy reliance on service workers that it directly employed, many of whom were unhappy with their treatment and emboldened by action elsewhere. If they succeed, they could establish a labor beachhead at Apple that reinvigorates the company's white-collar organizing, too.

The more immediate task is getting a union contract. Federal law requires companies to negotiate "in good faith" after workers vote to unionize, but it doesn't do a whole lot to ensure that happens. The Towson and Oklahoma City workers will have more leverage if other stores organize and if they can win over colleagues who voted no. If there's no contract deal within a year, employees could petition to vote out the fledgling union, a possibility they say Apple has brought up. Workers at other locations say the company is already telling them nothing at the Towson store has improved. It doesn't mention the removal of the tree, or that union members called in for questioning about their metrics would now have the legal right to bring a colleague as a witness.

Was all this inevitable? It's tough to name anything that's remained cool for two decades, let alone a retail store. In an era when the iPhone looks like a fairly mature line of business, Apple is trying to squeeze profits from every corner of its empire. And management philosophies tend to move in generational cycles, says Peter Cappelli, who runs the Wharton School's Center for Human Resources. The more humane, holistic approach that undergirded experiential retail has drifted out of vogue in favor of a relentless push for short-term productivity, he says, adding that he prefers the experiential approach and expects it to make a comeback before long. "The next generation forgets, and then they start over," he says.

For now, Apple employees are bracing for a holiday rush that tends to mean grueling extended hours and pressure to handle as many as four customers simultaneously. One worker, who spoke on condition of anonymity because his store is preparing to call a union vote, says he started thinking differently about Apple a couple weeks before Christmas last year, when he was struggling through his shift with what was soon diagnosed as Covid. While talking to a customer, he found himself wobbling back and forth, bracing himself against a nearby table. After the customer left, a manager who'd been watching reprimanded him for not pitching AppleCare. "That was the moment where I kind of realized, 'Oh, I'm working retail,'" he says. "It's still the same BS. It's just crafted in a prettier package." B

A TELECO

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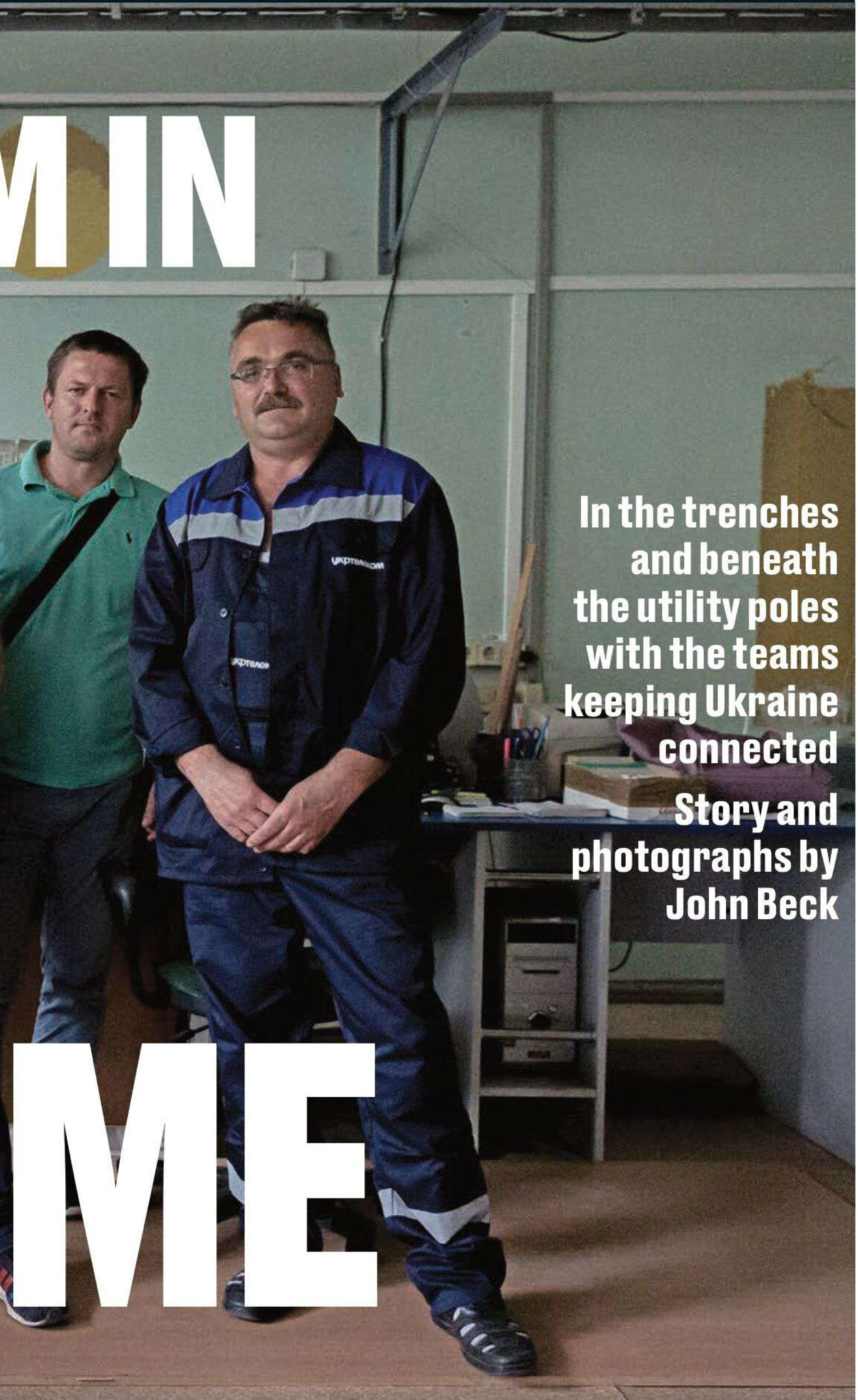
On the morning of March 20, Tatiana Bespalova got word that a piece of communications infrastructure in Pushcha-Vodytsya had been knocked out—by shelling, most likely. A hospital, an orphanage and the local Territorial Defense Forces had all been cut off, so she knew it had to be fixed. Pushcha-Vodytsya is a gathering of historic dachas and sanitariums in the forests on Kyiv's northwestern edge, part of the sector Bespalova manages for national telecommunications operator Ukrtelecom from an office on the city's Left Bank.

The closest engineering crew consisted of a four-man field unit and a dispatcher based on the other side of the Dnieper River from Bespalova. The men, all but one in their 50s, operated out of a large building with carefully tended potted plants inside and a wooden shelter out front where they played dominoes and smoked. They'd been working



In the trenches and beneath the utility poles with the teams keeping Ukraine connected

Story and photographs by John Beck

Ukrtelecom's Tatiana Bespalova with the crew she dispatched to Pushcha-Vodytsya

just about every day since the Russian invasion began almost four weeks earlier, but Pushcha-Vodytsya was closer to the front than anywhere they'd yet been, 3 miles from the Russian-occupied suburbs of Bucha and Irpin, and the fighting was heavy. They'd need a military escort.

Bespalova called Serhiy Hrebin, one of the crew's engineers, and explained the situation. She could hear their driver, Serhiy Rumak, grumbling in the background that it was far too dangerous a job. Bespalova asked Hrebin to pass Rumak the phone and spelled out how important it was. "OK," Rumak relented. "But what are you going to tell my wife?"

Around 11 a.m. the field unit packed into their white Renault Dokker van and drove out through deserted streets and looming modernist tower blocks. It was a familiar route; they'd all strolled beneath the pines and oaks of Pushcha-Vodytsya's woodland paths and fished in its glassy lakes. Now the way was partially blocked by barbed wire and military checkpoints. On the highway north they slowed at a sprawling defensive complex of zigzagging trenches reinforced with concrete emplacements to pick up the soldiers who would escort them. The roads were scarred by explosions and flanked by the charred remains of armored vehicles, and the booms of artillery and rattle of small arms were growing louder.

They kept moving past a large wooden Orthodox cross and into a village that was nothing like the idyll they remembered. Houses and public buildings had been ripped apart or burned to blackened skeletons, and there was no sign of residents. Rumak pulled up by a brick house behind a red gate, and the men discovered that the outbuilding holding the network node they'd come to repair was now rubble. Shells and rockets were splitting the air directly over their heads by then, and they could hear gunfire close by in the forest, with no way of telling whether it was Ukrainian or Russian. If something landed nearby, the troops escorting them said, they should lie flat on their faces, as quickly as they could.

The crew worked on fear and adrenaline. Whatever had hit the outbuilding had left nothing of the node to repair, but they were able to use a length of cabling to splice sheared connections and bypass it—not a textbook fix, but good enough. Oleksander Lobaiev, a sturdy cable man with a neat mustache and half-frame glasses, remembered afterward that his hands were shaking too badly to even hold a screw between his thumb and forefinger. Bespalova monitored the crew's progress via cellphone, hoping desperately to hear they were safe. Even from her office she could hear how heavy the shelling was.

Twenty minutes later, Rumak was driving fast, back the way they'd come. The team arrived at their base to find ▶

◀ another job waiting for them and no time to rest. Before they left again, they sparked up cigarettes, even those who didn't usually indulge.

"Sometimes if you're stressed, you need to bum a smoke," Lobaiev said when we met in July, laughing and miming a deep, grateful drag.

It was one of the worst days the crew could remember, even as this kind of work was quickly becoming ordinary for the men and women of Ukraine's telecom industry. At the outset of the conflict, Ukrtelecom, once a state monopoly and still a dominant fixed-line and internet operator, was serving hundreds of thousands of civilian customers, as well as the armed forces, state bodies and financial institutions. Since then, the company and providers such as Vodafone Group Plc and Kyivstar, the two largest mobile operators, have facilitated everything from the military's defensive actions to broadcasting President Volodymyr Zelenskiy's speeches to a rattled populace and his pleas to foreign leaders for weapons. They've issued text alerts warning of Russian saboteurs and informed communities of curfews and evacuation orders. They've allowed ordinary Ukrainians to check in with family, to follow the news and, in some cases, to report Russian troop movements and positions so the invaders could be targeted by drone, artillery or special forces units. They've assisted with organizing and broadcasting protests in occupied areas and with reporting Russian atrocities. And they've allowed Ukrainian intelligence agencies—aided by IT firms and activists—to counter Russia's broad disinformation efforts, as well as give Ukrainian troops an edge by monitoring Russian military communications.

To keep a network running in the war's opening days and weeks was to tackle an unceasing procession of crises

In doing so, Ukrainian telecom operators have begun to establish a playbook for future conflicts. Russia's invasion was the largest offensive operation since World War II, and it's the first major war in a country with infrastructure as sophisticated as that of Ukraine, where communication and power grids are comparable to those of its European Union neighbors. Matthew Ford, an associate professor with the Swedish Defence University, described it in a phone call from Stockholm as "the most connected battlefield in the world ever." In that context, winning the information war often means victory. And winning an information war requires a reliable network.

Dmytro Mykytiuk, Ukrtelecom's chief technical officer, spent the first few days of the invasion drinking cup upon cup of strong black tea in the LCD glow of a laptop screen in his basement. He'd been awakened by the booms of the first missiles hitting around 5 a.m. on Feb. 24, then rushed to his garden in a hastily pulled-on tracksuit to stare in stunned amazement at the large portion of the sky that appeared to be on fire over nearby Boryspil International Airport. His chief executive officer, Yuriy Kurmaz, called 10 minutes later. "It is a war, Dima," Kurmaz told him. Mykytiuk collected himself enough to start running through checks and plans. What exactly was happening? Had their fiber-optic networks been affected? How should they proceed?

The bulk of Ukrtelecom infrastructure seemed to be functioning, but there were already connectivity issues, and Russian troops were advancing fast toward the capital from the Belarusian border. Kurmaz and Mykytiuk ordered that their headquarters on Kyiv's broad Taras Shevchenko Boulevard be cleared of people and of information that might be useful to an invading force. It had been the main telecommunications hub during the Soviet era, too, so Russian intelligence would've known all about it. They arranged for key personnel to be dispersed farther west, and they had shelters set up in regional offices to evacuate employees and their families.

In Kyiv's predominantly residential Left Bank and northern outskirts, many of the responsibilities fell to Bespalova. An energetic 60, with light blond hair, a fondness for floral patterns and retirement on the horizon, she'd slept through the first explosions, dismissing a colleague's early morning call delivering the news as a prank. After all, she'd passed the previous workday enveloped in reassuring routine at her spacious office, with its spearmint walls and paperwork-piled desk, and she and her husband, Leonid, had gone to bed in a country at peace. A second call, and she was hurrying to work, arriving around 7:30 a.m. in a quiet panic, to calls from staff saying they'd be staying home or joining the stunned, scared crowds who were making for stations clutching bags and loved ones or gridlocking the roads west. Bespalova reassured them that they wouldn't face disciplinary measures for leaving. As the morning wore on she found three-quarters of her team missing.

The exception was her engineering crews, who were all present and waiting to be dispatched. Bespalova, who'd worked in the same building for nearly 40 years, knew most of them well—dependable family men with decades of experience digging, patching and cabling. They'd obviously realized they would be needed for whatever was to come.

By midday, after Zelenskiy had declared martial law, in a video filmed in his office using an upward-tilted phone camera, a line of armed figures in mismatched camouflage had formed outside the metal gates of Bespalova's office. They were volunteers with the newly formed Territorial Defense Forces, and they wanted help connecting fixed phone lines to command centers from the positions they were digging around the city, in case cell coverage was knocked out.

Bespalova had never imagined war would come to Kyiv, but the local residents who were taking up arms still knew to go to her. She put aside her shock to appoint a military liaison from her staff and started sending engineers out to lay cables for the soldiers. Soon she had some employees in the office kitchen cooking food for the troops and

Ukrtelecom engineers in a battle-damaged part of Borodyanka

others setting up a bomb shelter in the basement. Then reports of damage and official requests from security services and government bodies started coming in. She saw to those, too, quickly earning a nickname among the men and women battling to defend the city: the Mother of the Left Bank.

Her colleagues at Ukrtelecom and others in their sector had two advantages that helped them weather the opening stages of the invasion. One was their experience during the Covid-19 pandemic, during which they'd created secure remote working conditions. The other was that this wasn't their first brush with warfare. Russia had infringed on Ukrainian sovereignty eight years earlier, when its forces annexed Crimea and separatist proxies declared independent "republics" in the eastern Donbas region, setting off fighting that had killed more than 14,000 people by the end of 2021. Telecom companies had to maintain operations then, too, amid shelling, displacement and occupation. "For us," Olga Ustinova, CEO of Vodafone Ukraine, told me, "the war started in 2014."

Neither she nor anyone else I spoke to while reporting this piece had expected anything on the scale of the February invasion, however, despite increasingly threatening rhetoric from Russian President Vladimir Putin and increasingly urgent warnings from the US. Their contingency plans had accounted for scenarios such as an escalation in the east, or perhaps tactical strikes, but by no means a full-scale offensive.

The unthinkable came with such force that whole regions were cut off before anyone knew what was happening. In Ivankiv, 30 miles northwest of the capital, Andrii Melnychenko, a 46-year-old Ukrtelecom engineer, heard the blasts and watched the smoke rising from his window. Not long after, he took a video on his phone of armored vehicles and trucks daubed with the identifying white "V" markings used by the invading force speeding by on a main road. The power was soon out, and cell and internet services damaged, making it impossible for residents to find out what was happening beyond their streets or shelters. During the blackout, a phone signal became as valuable as the bread or water that Melnychenko would walk miles to collect for his family. It was the same farther south in Borodyanka, where Russian troops took a large Ukrtelecom building as a base and set up positions in a room with a good view down the main street. Desperate for news, a few people began climbing to the top floors of the town's apartment blocks to send messages or make calls, despite worries about Russian snipers.

Vodafone's Ustinova lived just outside Kyiv, too. She began running the company from her own basement, until the Russians got close enough that a Ukrainian artillery unit began digging an emplacement in her garden. After that, she and her husband evacuated, passing a column of tanks moving in the opposite direction.

To keep a network running in the war's opening days and weeks was to tackle an unceasing procession of crises. Infrastructure was knocked out every hour or two, including the electricity lines powering nodes, cell towers and almost everything else. Some of the damage was caused by troops digging themselves in to shelter from attacks and unintentionally snagging cables. Engineering crews kept working, frequently coordinating with Ukrainian forces, demining teams and power companies. And they weren't doing so only for their own employers. After Feb. 24, Ukraine's once highly competitive telecommunications sector became a cooperative of sorts. CTOs kept in regular touch via a WhatsApp messaging group, according to Mykytiuk, the Ukrtelecom executive. If one had issues they couldn't solve alone, others would help out.

Ustinova recalled a Vodafone employee who'd stayed on as Russian forces bombarded the southeastern city of Mariupol, keeping the company's sole remaining way station online with a diesel generator. When that way station, too, was destroyed, the worker provided the diesel to another operator that was doing the same with one of its stations. "For now," Mykytiuk told me, everyone has "forgotten the word 'competition.'"

Usage demands increased and shifted dramatically. Attempted calls on Kyivstar's network doubled at the start of the war, CTO Volodymyr Lutchenko told me. Meanwhile, the millions of people fleeing Ukraine increased the load on roaming channels threefold in the first week and a half. Huge numbers also moved to the western countryside, creating more rural users than had ever been envisaged, many of whom were trying to watch data-intensive news and social media videos. "And of course," Lutchenko said, "our network was not ready for this." To ease the pressure, they began working with suppliers such as Ericsson, Huawei and ZTE to add more than 100 bases.

Cell networks were also being weaponized by Ukraine's military ▶

◀ and intelligence agencies to gain a battlefield advantage. Russia appears to have had issues establishing secure military communications channels, and soldiers sometimes resorted to cellphones, allowing them to be monitored, tracked and eventually targeted. Asked about possible involvement, representatives for Vodafone and Kyivstar said they had no way to listen in on calls, and Ukrtelecom's Mykytiuk declined to comment.

March came, and with it began what Mykytiuk described as the hardest period of the war. The battle for Kyiv was growing desperate, and a column of Russian armor some 40 miles long snaked around the north of the city. Encirclement was a real possibility. Ukrtelecom began experiencing sophisticated cyberattacks aimed at commandeering or knocking out its systems, including one particularly dangerous attempt using compromised staff credentials from its office in occupied Kherson that required the company to halt regional operations for hours. "If the attack was successful, they could have totally destroyed all of our network in the whole of Ukraine," Mykytiuk said.

In the end, the Russian offensive on Kyiv met far fiercer resistance than Putin and his generals appear to have expected. By April their overstretched forces had stalled and retreated back across Ukraine's northern border. In addition to equipment and destroyed vehicles, they left behind grim evidence of abuses and atrocities against civilians. Some of the most egregious took place in towns or areas where communications had been shut down. Without a link to the outside world, some Russian soldiers had apparently acted with impunity.

Telecom companies pushed up close behind the Ukrainian counterattack in areas such as Bucha and Irpin, scrambling to get at least some services to trapped and traumatized residents. Ukrtelecom's fiber optics were "totally destroyed" Mykytiuk said, and electricity was out, too. The company building in Borodyanka that Russian forces had used as a base was raked with gunfire, its windows shattered and chunks torn out of its walls. On the door of one of the rooms, someone had taped a piece of paper with an order written in black ballpoint: "Do not pee here! (fire position)."

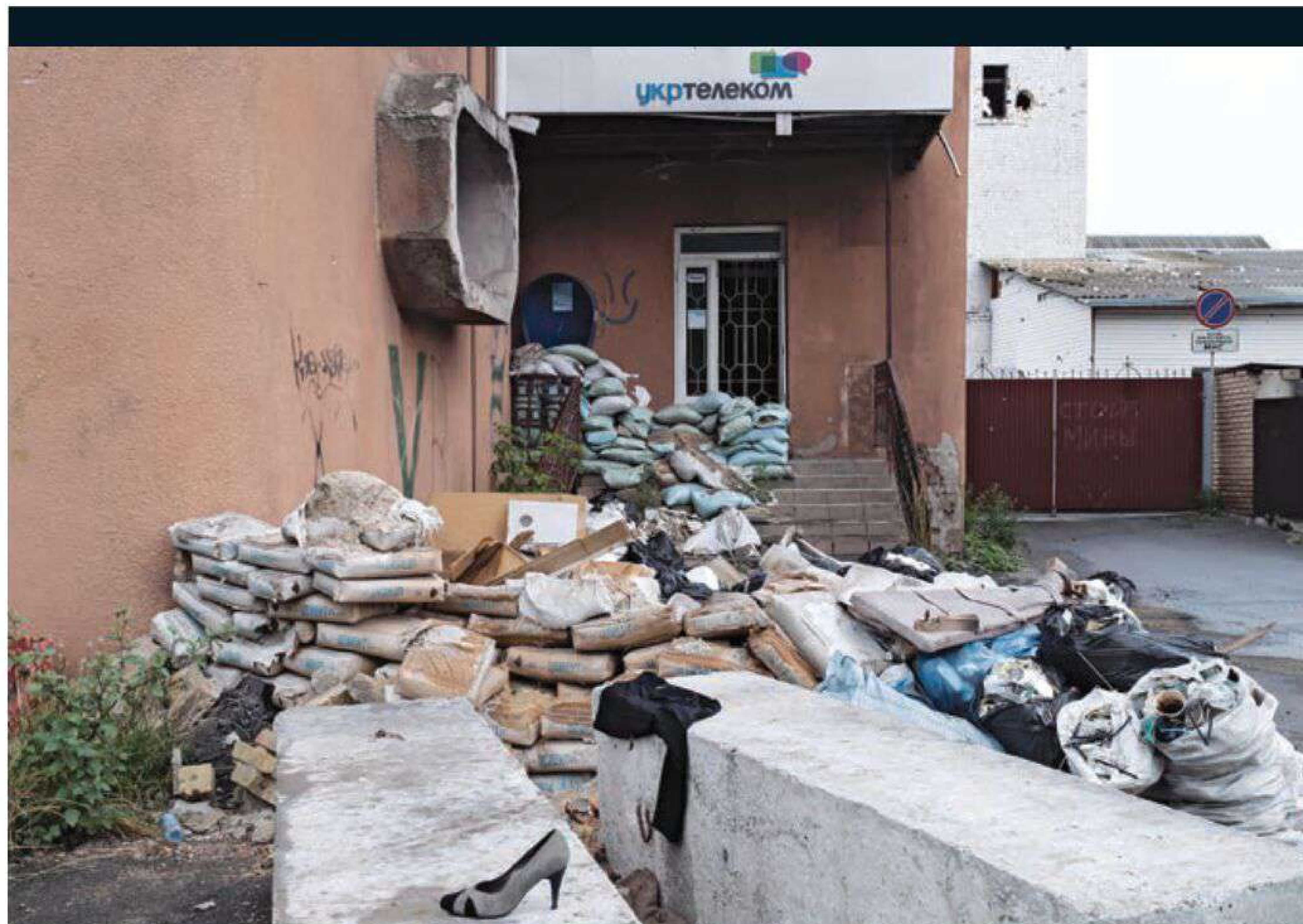
Vodafone's Ustinova visited Bucha just two days after it was retaken, while bodies were still being discovered strewn across streets or dumped in basements and shallow mass graves. More than three months later, she told me, she felt as if the smell was still with her.

For those who were finally able to speak with friends and family again, the efforts to restore communications meant everything. On a July afternoon, leaning against his battered car, Serhiy, a Borodyanka taxi driver who lived through the occupation and asked to be identified by only his first name, told me that after Ukrainian forces arrived, it seemed like half of the town's residents emerged onto devastated streets to throng around a patch of signal by the fence of the local orphanage. Natalia Timofeyeva, an immaculately dressed 60-year-old with platinum hair and neat makeup, explained how a sliver of Kyivstar reception had been the only thing that had allowed her to work out a plan to evacuate.

Once the most pressing emergencies were dealt with, the telecom operators began reinforcing their networks, building in more safeguards and redundancies than would normally be needed by a civilian operation. Mykytiuk said Ukrtelecom quadrupled its internet capacity, activating existing backups, building out more, increasing efficiency and leasing channels from other companies. Disconnecting any major population center would now be far more difficult for an attacking force. Cyberattacks continued at the rate of around 10 per week, he added, but Ukrtelecom's security department was dealing with them.

The measures Ukrainian companies have taken are likely of great interest to other European countries threatened by Russia, as well as to any government attempting to safeguard its infrastructure against a possible aggressor state. Mykytiuk said that Ukrtelecom was sharing operational details with a counterpart elsewhere in eastern Europe and that it "constantly" receives invitations from others in the industry to discuss wartime experiences.

Ford, of the Swedish Defence University, suggested to me that Taiwanese authorities might have created and pre-positioned a digital infrastructure of their own. "Should China invade, cut off the internet and try to stamp out opposition like they have done in Hong Kong," he said, "I'd expect all the imagery of their occupation to be



Sandbags alongside possibly looted goods cleared from a previously Russian-occupied Ukrtelecom building in Borodyanka all over the web fairly quickly as the data gets leaked out to the world."

After Russia's retreat from the area around Kyiv, Putin's focus shifted to an offensive aimed at taking the entire Donbas region while his forces attempted to consolidate control of occupied areas. In Kherson, which has since been liberated but was then on the Russian side of the southern front, that included systematically shutting down the remaining fixed-line, cell and broadband networks operated by companies in Ukrainian-controlled territory. Russian troops intimidated employees, Mykytiuk said, and physically breached infrastructure.

In mid-May they got to Ukrtelecom's network. Mykytiuk and his team were initially able to migrate traffic and users to Kyivstar fiber optics, then—when those were disconnected—to Eurotranstelecom LLC's. That service, too, was cut on June 1, and Ukrtelecom staff subsequently received a call from men whom Mykytiuk assumed to be in the Russian Federal Security Service (FSB), offering to reconnect them through Crimea, where telecom infrastructure had long been under Russian control. That would've placed their customers in the grip of Russia's censorship and surveillance apparatus.

"We decided not to recover our fiber-optic connections in Kherson and to stop our business in Kherson," Mykytiuk said. "We do not collaborate with Russia." Some local providers chose differently, however, and began operating in full compliance with Moscow. Their users became subject to the same internet restrictions Russians were, and they became far easier for occupation authorities to track down.

The Donbas offensive largely targeted areas that Ukrainian forces had been fortifying since 2014. It involved artillery battles over sprawling front-lines that favored Russia's overwhelming advantages in numbers and firepower. Russian guns were soon bombarding Ukrainian positions with an estimated 60,000 shells a day, and a Zelenskiy aide said in early June that as many as 200 troops were dying every day. When I visited the Donbas three weeks later, medical teams who were speeding a constant stream of ambulances to the front and back described horrendous casualties. Troops said they were often only able to huddle in trenches under the relentless barrages.

Telecom engineers continued to work. In Ukrainian-held Bakhmut, on the Donbas front, that included Oleksander Leontiev and his crew. Leontiev, who was born in the town and has worked there since 1996, sent his family west in early April, as the fighting got worse, but himself stayed to maintain the Ukrtelecom network.

Bakhmut has been close to hostilities since 2014, so Leontiev's crew was accustomed to navigating the checkpoints and minefields of militarized zones. But that had been a different kind of war, he told me in a Skype call. Back then, both Ukrainian forces and separatist fighters had relied on Ukrtelecom's network, so his team had been able to negotiate local cease-fires to carry out repair work. One, to cover a particularly big job in 2015, lasted an entire week.

The invasion brought violence on a scale he'd never seen. "We can hear shelling all the time," he said. His crew still went out most days, taking particular care if they were close to anything Russian forces might target. They repaired fiber-optic links in craters that could swallow an SUV, picked through the remnants of destroyed buildings and traversed pitted roads and fields littered with the detritus of war. The previous day, Leontiev said, they'd been working from a position where they could see and hear the shots and the impacts of shells.

I spoke with Leontiev from Kyiv, where the war now felt a long way off. Shops, bars and restaurants were open. Families strolled through carefully tended parks and lay on the sandy banks of the Dnieper. Air raid siren wails interrupted now and again, but they were mostly ignored. Central Kyiv hadn't been targeted for weeks, and it would stay that way until Oct. 10, when an onslaught of Russian missiles struck populated areas across Ukraine—the start of an ongoing campaign to cripple civilian infrastructure.

Mykytiuk, Ustinova and Lutchenko all welcomed me in their reopened offices, while the Ukrtelecom engineering team that had carried out the Pushcha-Vodytsya mission retraced their route for me one sunny afternoon, a waltz playing on the car radio. The village had changed again, bullet holes covered by fresh paint and wreckage dragged away, so the men mostly described things as they'd briefly been. "You should have seen it before," they told me at one spot, sounding slightly disappointed. "All the damage is gone now." A man appeared from a neighboring house and introduced himself. "I was here," he said. "It was hell. Rockets were flying, shells were falling."

Bespalova had insisted on coming with us, sitting wedged into the back of a van next to Lobaiev, the burly cable man, and chatting happily with her staff. The Mother of the Left Bank was still hard at work. When I visited her building, staff in the checkerboard-tiled kitchen were loading plastic tubs with hefty meatballs, coleslaw and cherry cake for the Territorial Defense. They were cooking for far fewer now, Bespalova said, but the local unit still messaged each morning to say how much they were looking forward to the food. In the next room a group of women were busy tying on strips of material to camouflage netting. Ukrainian forces were preparing for a series of counteroffensives, including in Kharkiv and the Donbas, that would retake hundreds of square miles of ground. Telecom companies would again move in fast to restore connectivity to devastated towns and cities.

Bespalova's son, himself a father of three young children, had joined the army and was about to be deployed to the Donbas. She was worried. "My whole family believes in victory," she later told me. "But I'm still really anxious." The worst thing, she said, was that she and Leonid wouldn't be able to stay in touch with their boy because strict operational security measures prohibited front-line soldiers from speaking regularly with their families. This blackout wasn't one she could fix. Ⓑ

The generous contributions of our Annual Disaster Giving Program members are at work year-round to provide help and hope to families after devastating disasters — from hurricanes and wildfires to home fires.

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A Slice of Heaven

Save home baking projects for the new year and order the best cakes with regional American flair this festive season, all delivered straight to your table. *By Kate Krader*
Photograph by Ted and Chelsea Cavanaugh

HOLIDAY ENTERTAINING SPECIAL

November 21, 2022

Edited by Chris Rovzar

Businessweek.com

When it comes to dinner-table domination, it's hard to beat a good layer cake. Rising high above a pie and decorated with dramatic swirls of frosting—chocolate, pink, white—a cake has the power to transfix everyone who beholds it.

The good news for cake lovers is that there's never been a better time to get a great one shipped to you. When neighborhood foot traffic was curtailed during the pandemic, pro bakers from all over the US teamed up with mail-order companies or learned how to deliver their cakes to sweet-toothed customers themselves. Meg Ray, founder of Miette in San Francisco, first experimented with sending cakes for a friend's Zoom birthday party in 2020; it was such a success that she now ships her rich chocolate Scharffen Berger cake by UPS Next Day Air nationally. "Cakes have always been a huge category for us, but it's become even more popular as people want to support local bakeries around the country," notes Joe Ariel, founder of the specialty-food shipping company Goldbelly Inc.

Green Tea Mille Crêpes Cake

NEW YORK!

Dozens of Lady M boutiques dot the globe, but the brand began in New York, and its 20-layer cakes—one of which is filled with dazzling green-tea cream—will always have a connection to the city, says Japan-born senior pastry chef Manami Narita: "In New York, fusion food and desserts are part of the gastronomic culture because of the international population." Here, Narita transforms matcha into a light-as-air delight. *$108; ladym.com*

Scharffen Berger Cake

FRA

Miette Patisserie & Confiserie nam
Bay Area chocolate trailblazer Sch
Miette's Meg Ray now uses Guitt
tribute. Two coatings of a bitters

LOS ANGELES!

Milk'N Berries Cake

Southern California mini chain Porto's Bakery & Cafe got its start when founder Rosa Porto started selling cakes from her home in Cuba to raise money for her family to leave the island. The flagship location, on Sunset Boulevard, opened in 1976. Along with a selection of savory croquetas filled with ham and chicken, Porto's specializes in a stacked cake stuffed with fresh, juicy chunks of strawberries, plus blackberries and blueberries, festooned with whipped cream. The sponge layers are doused with tres leches, a brandy-spiked mix of condensed and evaporated milk. *$42; portosbakery.com*

One of the world's most recognizable desserts is an invar
of coconut decorating the sides. Be picky about its sou
the Southern baking staple well. One of the better
specializes in mail order and started in the Ge
The construction of three tender yellow cake
coconut icing and coconut crumbles tha
$70; savannahcandy.com

S

Coconut Layer Cake

The stories behind these bakers can read like a heartwarming holiday movie script: At Good Cakes & Bakes, a nine-year-old Detroit bakery presided over by April Anderson and her wife, Michelle, desserts are inspired by Anderson's mother and grandmother, who moved north from Mississippi as part of the Great Migration. The star: a Southern-inspired strawberry crunch cake with alternating white and pink-berry layers, with a dense whipped cream cheese vanilla frosting (page 55). The finishing touch is a coating of hot-pink crushed strawberry Oreos. "We started making it in July of 2018, and it's become so popular all over Detroit. People make variations of it, they send me pictures, I see it on their Instagram," says Anderson. Its fans include Oprah Winfrey and fellow baker Lisa Ludwinski, who owns the acclaimed Sister Pie across town and lauds "April's commitment to neighborhood investment." For those who can't get to the community hub in person, go online to order the strawberry crunch cake or one of these six other regional bests. And prepare your tables accordingly.

SAN ANCISCO!

ned this dome-shaped cake after harffen Berger. Although it moved and tard chocolate, she kept the name in sweet glaze give it an extra-rich flavor and a terrific shine. $60; miette.com

Dulce de Leche Bundt Cake

MIAMI!

Mariolga Calderon started Mo's Bundt Cakes in 2009 using Puerto Rican family recipes for the shop's specialty. Incarnations include Nutella, guava and Biscoff cookies, but one of the most popular is a caramel-flavored bundt, with a double dose of the Latin American confection dulce de leche: It's laced into the yellow cake base and drizzled on top in extravagant swoops. $59; mosbundtcakes.com

iably towering masterpiece of white icing with shavings rcing: A lot of bakeries produce it, but few make r ones is at Savannah's Candy Kitchen, a chain that orgia city where its flagship store still stands. e layers comes with a judicious amount of at fall over the top and sides like snow.

SAVANNAH!

Montilio's Baking Co. has been around since the 1940s, producing an array of Italian pastries. It welcomed Queen Elizabeth II to town with a cake topped with an ocean liner, and it made a 1,200-pound birthday cake for Tom Brady when he was the New England Patriots' quarterback. But its most famous cake was first produced in 1953 for the wedding of John and Jacqueline Kennedy. Montilio's is still selling the high-comfort blend of white cake layers spread with raspberry jam, filled with raspberry frosting and coated with thick vanilla buttercream. $90; montilios.com

BOSTON!

JFK's Wedding Cake

PREVIOUS PAGE, PROP STYLIST: MARINA BEVILACQUA. THIS SPREAD: COURTESY COMPANIES


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Get Lit

If you're looking for a spark, here are some surefire ways to fan the dinner party flames

Photograph by Frank Frances

Part of the fun of using candles is pairing relatively normal-looking wax, such as these 1 **Floral Society 10-inch fancy tapers** (*$32 per pair; thehuntressny.com*), with an incongruous partner like the 2 **Faunacrystopolis candle holder** (*$480; baccarat.com*), which designer Jaime Hayon has rendered as a winking monkey in crystal. The 3 **Apollo candle, No. 11** (*$110; thehuntressny.com*), with scents of eucalyptus and oakmoss, needs only a flame to shine: To that end, consider the 4 **Flora table lighter** (*$1,200; floranero.com*), which, with its honey-colored aluminum housing, looks nothing like your average Zippo. In the almost-too-pretty-to-light category are a 5 **two-tone cone candle** (*$32 per pair; store.moma.org*) and a 6 **floral taper candle** (*$45; stfrank.com*). The latter joins a 7 **spiral candle** (*$35 for six; hay.com*) and a 8 **Floral Society 10-inch fancy taper** in petal (*$32 per pair*) in a 9 trio of **ribbed candle holders** from designer Kelly Wearstler (*$150-$350; kellywearstler.com*). These 10 **hand-dipped candles** in honey (*$8 per pair; hawkinsnewyork.com*) would work just as well as the 11 **12-inch tapers** by Creative Candles (*$12 per pair; rwguild.com*) when stuck into the **stem candle holders** in 12 burnished brass and 13 blackened brass (*$250, $225; rwguild.com*). Light them all the old-fashioned way with 14 **La Flamme matches** (*$12; thehuntressny.com*) in decorative toile packaging. The brass figures of the Haas Brothers' 15 **King + Queen candlesticks** (*$795 per pair; l-objet.com*) will outshine anything that goes above their grimacing faces, and you can snuff out excess dripping with a solid brass 16 **candle douter** (*$30; hawkinsnewyork.com*). But for sheer whimsy, nothing tops these 17 **Carl Durkow candles** in 8- and 11-inch sizes (*$38, $42; store.moma.org*). Or go vintage with 18 **Venetian rose candle holders** (*$1,268 for the pair; housesandparties.com*), which match blown glass with a swirled base.

PROP STYLIST: ELVIS MAYNARD

In Festive Spirits

Fourteen new ways to imbibe the season's bounty. *By Elin McCoy and Brad Japhe*

1 2014 Iron Horse Stargazing Cuvée Brut
Toast to scientific achievement and the marvels of the universe with this new bubbly from a top Sonoma pioneer. The label image, captured by the James Webb telescope and released by NASA in July, shows the "cosmic cliffs" of the Carina Nebula, which scientists say depicts the earliest rapid phases of star formation. The bright, racy, lemony pinot noir and chardonnay blend, available only in magnums, comes with supertiny bubbles and an aroma of freshly baked pastries. Iron Horse fizz has been served by the White House under seven consecutive presidential administrations, so it's bipartisan, too. *$195*

2 Empirical Symphony 6
This pink-hued, botanically rich spirit resists easy categorization. Instead of grouping alongside the many "New World gins" of today, it's more of a citrus-led affair without any juniper or pine. Savory notes arrive by way of blackcurrant, fig leaves and an Indian grass root. Inspired by the Beethoven symphony, Empirical's two founders (and Noma alums) conceived of the drink as a "pastoral" movement and love letter to nature. Try it on ice or in gimlet form. *$50*

3 Rye & Sons
Former Per Se head sommelier and Mouton Noir Wines founder André Hueston Mack expands into Kentucky straight rye. Think of it as a winemaker's approach to whiskey: Sophisticated and approachable, with bright notes of anise, cinnamon, roasted nectarine and salted caramel, as well as aromatic hints of orange zest, eucalyptus and clove. Pour it straight without pretense or use it in a variety of cocktails. *$29*

4 El Tesoro 85th Anniversary Limited Edition
A celebration fourscore and five years in the making, El Tesoro's latest release bottles tequila drawn from barrels that previously held Booker's 30th anniversary bourbon for up to 16 years. The vanilla-rich casks were then filled with El Tesoro blanco and aged for an additional 36 months. *$500*

5 Gold Fashioned
Masterminded by Robert Haynes, a former bartender at Chicago's Violet Hour and Analogue, this old fashioned finally gets the bottled format right by using three different bourbons, five types of bitters and demerara sugar. It even comes with its own atomizer of orange zest in a little box, so your guests will still get the frisson of spritzing their glass without all the messy stirring. *$150*

6 2008 Louis Roederer Cristal
An extravagant choice, the flagship cuvée from Louis Roederer was first created for Czar Alexander II of Russia in 1876. Adorned with a glistening label, this clear bottle of golden colored, toasted-almond-scented Cristal comes from a great vintage. The cool, dry summer of 2008 gave it freshness, while 10 years of aging added power and a velvety texture. The Champagne house has re-released it in festive magnums, the format you'll see in shops this fall. *$1,000*

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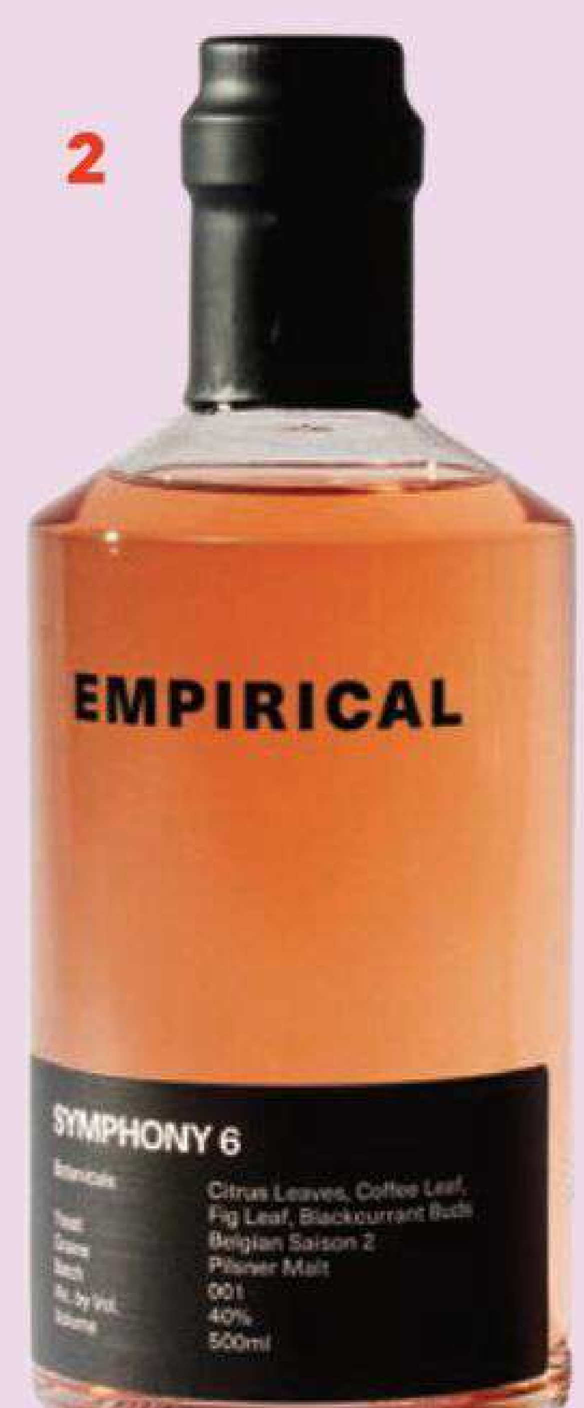

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7 Germain-Robin XO Brandy
One of the first brandies to be distilled from California pinot noir grapes, in 1983, this expression is made in pot stills originally designed for cognac in southwestern France. The aging process in Limousin oak barrels showcases a dark-cherry character and a rich, silky mouthfeel. Colombard distillate adds an apple character, while Semillon gives it peach and apricot notes—another treat, if you will, after dessert. *$55*

8 2012 Rare Rosé Millésime Virtuoso
Bottles of this just-released luxury cuvée Champagne are decorated with a sparkly design that looks like a jeweled tiara. The coppery pink pour offers fruit, floral and spicy notes, layers of flavors, and has a wonderfully silky texture. The prestige brand was spun off from Champagne house Piper-Heidsieck; only 12 vintages have been produced over the past four decades, and this is the third rosé. It's a guilt-free quaff, too: Last summer, Rare was certified as a B Corp. Its commitment to the environment includes a drastic energy saving program, eliminating fossil fuels in production, and using zero herbicides and pesticides. *$369*

9 Aplós
This libation uses hemp cannabidiol to help take the edge off without having the potentially negative effects of alcohol. James Beard Award winner Lynette Marrero worked on its blend of yuzu, rosemary, basil, cucumber and dandelion. *$48*

10 Lagavulin Offerman Edition: Charred Oak Cask
During his turn as lovable curmudgeon Ron Swanson on *Parks and Recreation*, actor Nick Offerman played a character not unlike himself—a lover of woodworking, steak and Scotch, specifically Lagavulin. His third collaboration with the brand brings all three of his passions together, highlighting a smoky concoction meant to pair with meat. *$80*

11 Mr. Black Mezcal Cask Coffee Liqueur
This rich, roasted, superpremium liqueur has won a wide audience around the globe. As a testament to that popularity, Australia's Mr. Black was recently purchased by Diageo—the same folks who bring the world Baileys. In this release, java-led base notes are surrounded by smoke and vegetal earthiness. To make it happen, Mr. Black imported 30 ex-mezcal casks from Ilegal, half a world away in Oaxaca, Mexico. They were promptly filled with Mr. Black's flagship 23% alcohol-by-volume coffee liqueur and left to sit through 12 hot weeks of subtropical summer. The aging also introduces hints of nutmeg and clove into the finish. Mix it with milk, and you've got an instant eggnog alternative. *$60*

12 2020 Domaine de Triennes Rosé
Rosé season is year-round now, and this pale pink wine is dangerously easy to drink. It combines Burgundian sophistication and seductive floral aromas with the flavors of watermelon and wild strawberries and finishes with a stony mineral edge. Behind this blend of cinsault, syrah, grenache and merlot grapes are two of Burgundy's greatest vintners, Aubert de Villaine of Domaine de la Romanée-Conti and Jeremy Seysses of Domaine Dujac. Consider it the bona fide party starter: The 3-liter-bottle version adds an essential bit of pomp to your celebratory proceedings. *$69*

13 Procera Blue Dot Gin
Distilled in Nairobi, Kenya, this is the first commercially available gin built from fresh, never dried African juniper (*Juniperus procera*). The 88-proof spirit incorporates a laundry list of vibrant botanicals collected from across the continent: Kenyan pixie orange, Madagascan pink pepper, acacia honey from Somalia, cardamom and mace from Zanzibar. It intones provenance inside and out; each bespoke decanter is mouth-blown from recycled glass and enclosed with a rounded piece of native palm wood. Your signature martinis will never be the same. *$85*

14 The Dalmore Luminary No. 1 Collectible Edition
This spry and spicy 15-year-old Highland Scotch single malt was finished in a combination of ex-Amarone barrels and specialty Kitsugi "frankencasks" constructed from Japanese oak, American white oak and felled Scottish timber. The unique method results in notes of candied nuts and cranberry sauce for an ideal holiday dram. With only 15,000 bottles in circulation, some may opt to hold on to it as an investment, but your holiday guests will want to enjoy it now. *$245*

PHOTOGRAPHS COURTESY COMPANIES

The CDMX consists of mezcal, bitters and sweet vermouth

On Your Mark, Get Set ... Shake

Want to get the party started quickly? A new book has recipes for drinks that can be made in 60 seconds or less

By Kate Krader

As we step into holiday party season, take a minute—but not two—to consider one of the most underrated gifts: time.

A new entertaining tome titled *60-Second Cocktails: Amazing Drinks to Make at Home in a Minute*, by Joel Harrison and Neil Ridley (Princeton Architectural Press; $25), features recipes for drinks that can be made in about the amount of time it takes to choose, open and pour a bottle of wine.

Harrison and Ridley, seasoned cocktail writers, are quick to point out that they're not bartenders. They've geared their book toward people like themselves: Fans of expertly made drinks who learned how to mix them at home during pandemic lockdowns and are now showing off their new skills at dinner parties. "We love going to bars, but we love this new movement of trying to make great drinks at home," says Ridley.

Whether or not most readers can make these drinks in 60 seconds—get all your ingredients laid out at the start, just in case someone's got a stopwatch—the volume does highlight some useful fast hacks. Instead of precise measurements, ingredients are given in proportions: two parts vodka to one part triple sec, for example. (The book suggests that 1 part equals 1 ounce or 25 milliliters.) The mental math takes a little getting used to, but it's terrific drink-making shorthand, once you've got it.

Ridley and Harrison's specialty is tweaking the classics. One of their smart innovations is to forgo simple syrup, the mix of water and sugar that sweetens countless cocktails. Minus the cooling, it can be made in about three minutes, or three times too long for the conceit. So the duo find alternatives for it that many people will already have on their shelves.

Or consider the maple syrup old fashioned, based on the traditional cocktail made by stirring a sugar cube until it dissolves. It's a time-honored, not particularly challenging task, but it's also not an efficient one if you're making a round for 10 guests. The maple syrup edition uses a splash of the cold weather sweetener with whiskey that produces a lovely, complex taste. It's also easily batched and stored in the fridge; add the ice cubes just before serving.

A recipe for mocha martinis honors the omnipresent espresso drink but adds chocolate-hazelnut spread to replace both simple syrup and coffee liqueur. Because what better way to kick off a party than with caffeine?

But my personal favorite of the bunch may be the CDMX (above). It riffs on the Manhattan but with earthy, smoky mezcal that combines with sweet vermouth and a hit of orange for a drink that, in a flash, tastes like the holidays.

Maple Syrup Old Fashioned
Serves 1
2 parts American whiskey, such as Jack Daniel's or Maker's Mark
½ part maple syrup
2 dashes Angostura bitters
1 dash cold water
1 strip of orange zest
Add the whiskey, maple syrup and bitters to a chilled rocks glass or tumbler, then the cold water. Stir for about 20 seconds, then add a few ice cubes or 1 big cube. Give a final stir, squeeze the orange zest into the drink, then add the zest to the glass.

CDMX aka Mexico City
Serves 1
2 parts mezcal
1 part sweet vermouth
3 dashes orange Angostura bitters
1 tsp water
1 strip of orange zest
Add all of the ingredients except the zest to a cocktail shaker with ice cubes. Give it a good shake for 8 to 10 seconds. Pour through a tea strainer into a chilled coupe and garnish with the zest.

Mocha Martini
Serves 1
3 parts freshly brewed, cooled espresso
1 part dark rum
1 tsp chocolate hazelnut spread
Add all the ingredients to a cocktail shaker and stir with a long spoon until spread is dissolved. Add ice, cover and shake, then strain into a chilled martini glass or coupe.

PHOTOGRAPH BY VINNY WHITEMAN

Be a Host With the Most, Per Emily Post

Avoid common seasonal pitfalls on the advice of the leading etiquette guide

By Sarah Rappaport

The holidays may be the most wonderful time of the year, but entertaining during them is stressful. "Sometimes the moment overwhelms people, and they forget to focus on the important thing, which is human connection," says Daniel Post Senning, co-president of the Emily Post Institute and great-great-grandson of famed manners expert Emily Post. "The point of etiquette is to focus on relationships, and if you can do that during the holidays, you'll be in good shape."

In October, Senning and his cousin Lizzie Post marked the centennial of *Emily Post's Etiquette* with the release of the guide's 20th edition. It covers everything from thank-you notes (still relevant!) to how much to tip in a ride-share (10% to 20%). Senning spoke with Bloomberg Pursuits about avoiding common mistakes during festive entertaining.

The only wrong response to an invite is no response.
Hosts can take a no, but the guest who doesn't reply is the biggest challenge. The place where people get into trouble is anxiety about coming and going, so be clear about expectations, both as a guest and a host, especially for overnight invitations—when am I supposed to arrive and when am I supposed to leave? The old expression that fish and house guests start to stink after three days is worth keeping in mind.

Be willing to accept the cost of entertaining.
As a host, accept that accidents will happen. Don't put out a tablecloth you can't tolerate a spill on.

Overspending on a gift can negate your good intentions.
Don't give something that will make someone feel uncomfortable or like they're indebted to you. That isn't true of every expensive gift—sometimes it's just a nice thing to do—but personalize it instead of letting the cost do the talking. Make sure it expresses what you appreciate about the person. Keeping the personal relationship a part of the exchange will help your gift be well-received.

Accept gifts graciously.
Gift-giving feels so good for the person doing it, to know someone well enough to give something that lands exactly right. But sometimes we forget how to receive gifts. Connect with the person giving it. Thank them—and personalize your thanks: "It's thoughtful for you to do this." "It's so surprising." "I can't believe it!" Find and show genuine appreciation.

Reconsider guests' dietary concerns as an opportunity rather than a burden.
As a host, your guests' comfort and enjoyment should be your top goal. So instead of thinking, "Oh, I can't believe I have to deal with all these different specialty diets and restrictions," say to yourself, "This is what my guests eat, and it's good that I know that because it lets me plan appropriately for the meal we're having together." As a guest, bring up dietary restrictions as soon as possible.

Leave your poorly behaving children at home if possible.
You don't want to subject your host to the whims of your children's moods or to detract from the event for other people. Do the calculus: Will they be a bigger disruption than a last-minute cancellation? If you are bringing the kids, plan ahead—a good nap or a well-timed feeding can solve many behavioral issues.

Remember the role that gratitude plays in the holidays.
As a host, always thank people for attending and for anything they contribute. As a guest, always thank your host at least twice: once, warmly on your way out the door, but then again, with a follow-up call or with a paper thank-you note. We live in an era of text messages, but writing your gratitude down in your own hand and putting it in the mail is always well-received. B

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Lessons in How Not to Fire People

By Alex Webb

There may not be a good way to fire people. But there absolutely is a bad way. In fact, several bad ways. And Twitter Inc.'s self-appointed chief twit, Elon Musk, seems to have hit on most of them. Some employees were laid off by email. Others found they'd been locked out of their work laptops and messaging channels before they even had official word of their dismissal.

There was no mention by Musk of the most important reason the firings were necessary—namely that he needs to find some $1.2 billion to pay the interest on the debt he raised to fund the deal. Worse: He's repeatedly seemed to blame employees for the company's problems.

In *The Hard Thing About Hard Things*, a 2014 broad how-to guide for startup founders, venture capitalist Ben Horowitz outlines five steps to do layoffs properly: Get your head right; don't delay; be clear in your own mind why you're firing people; train your managers; and address the whole company.

Camilla Boyer, director of executive communications at payments processor Checkout.com, condenses the advice to three concepts: accountability, empathy and closure. She says she not only had the misfortune of working at three companies inside the past year to have carried out mass firings, but also had to help executives communicate the decisions.

"Accountability, that means having a leader who is willing to own their mistakes," she says. "We don't expect leaders to be perfect, but we expect them to have the humility to admit that they are fallible, and that goes a long way to retaining the trust of the remaining team."

Empathy often comes down to giving your employees a generous severance package. The decision by Meta Platforms Inc. Chief Executive Officer Mark Zuckerberg to fire 11,000 employees may seem brutal as he continues to spend billions of dollars on his metaverse plans, but he's giving them at least 16 weeks of pay and six months of health-care coverage, and they'll still receive their 2022 bonuses.

Finally, "closure is a really important one that companies often underestimate," says Boyer. "It means giving both sides—those who are leaving and staying—the chance to say goodbye." That could mean letting them retain access to work email and message channels for a few hours, even as sensitive information is restricted.

For Boyer, the absolute no-go is firing people en masse over email, as Musk did, or video call, as happened with online mortgage platform Better.com, which let 900 employees go via Zoom call last year. That's because, while those losing their jobs bear the brunt, managers also need to think about how it will affect the morale of other employees.

The technology industry, after years of outsize growth, is now cutting back, and thousands of workers are losing their jobs. As executives' sky-high ambitions fall back to earth, the least they can do is cushion the landing for the victims of their failures. B

ILLUSTRATION BY GEORGE WYLESOL

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